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U.S. ARMY MATERIEL COMMAND - COMMITTED TO PROTECTION OF THE ENVIRONMENT -



Offpost Operable Unit
Remedial Investigation and Chemical
Specific Applicable or Relevant and
Appropriate Requirements
Final Report
(Version 3.1)
Volume III



Environmental Science And Engineering, Inc.

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ROCKY MOUNTAIN ARSENAL • COMMERCE OTY, COTORADO • 80022-2189

LITICATION TECHNICAL SUPPORT AND SERVICES

Rocky Mountain Arsenal



Offpost Operable Unit
Remedial Investigation and Chemical
Specific Applicable or Relevant and
Appropriate Requirements
Final Report
(Version 3.1)
Volume III



December 1988

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Prepared by

ENVIRONMENTAL SCIENCE AND ENGINEERING. INC.
HARDING LAWSON AND ASSOCIATES

Prepared for

U.S. ARMY PROGRAM MANAGER'S OFFICE FOR ROCKY MOUNTAIN ARSENAL

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APPENDIX E
GEOLOGIC AND HYDROGEOLOGIC PRODUCTS

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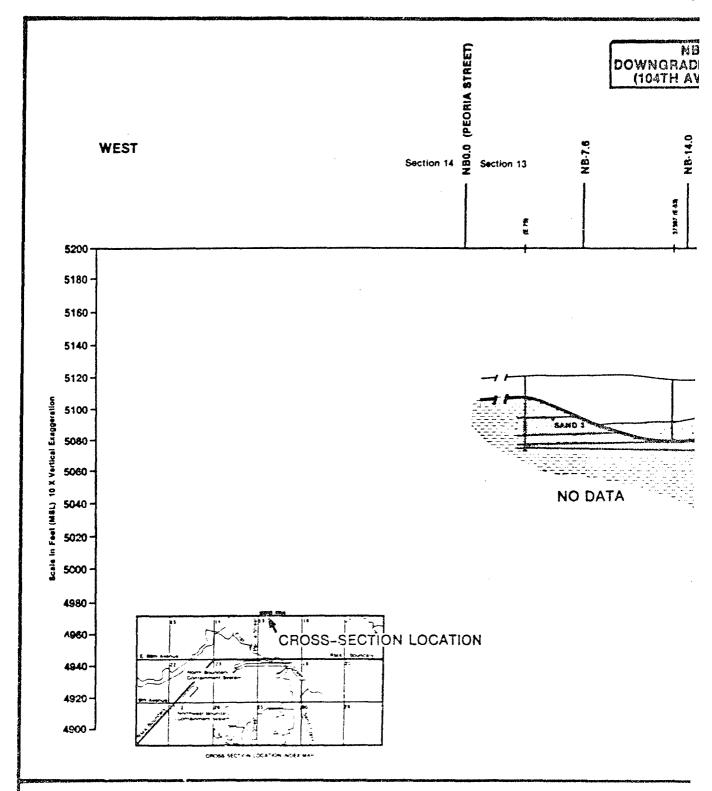
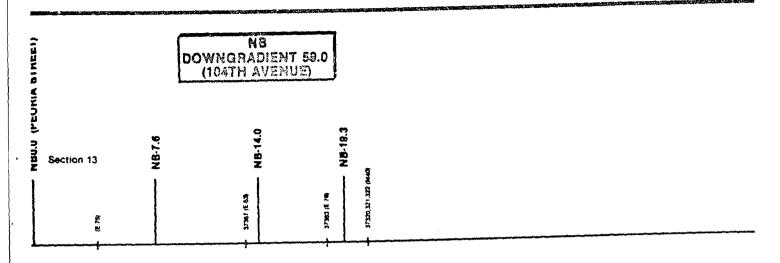
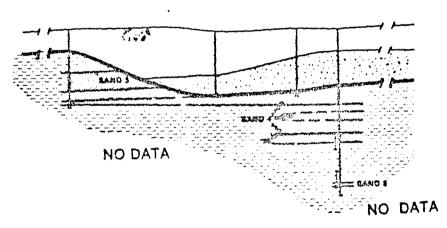


Figure E-1

EAST-WEST GEOLOGIC CROSS-SECTION NB DOWNGRADIENT 59.0 (104th. Ave.)

SOURCE: ESE, 1988



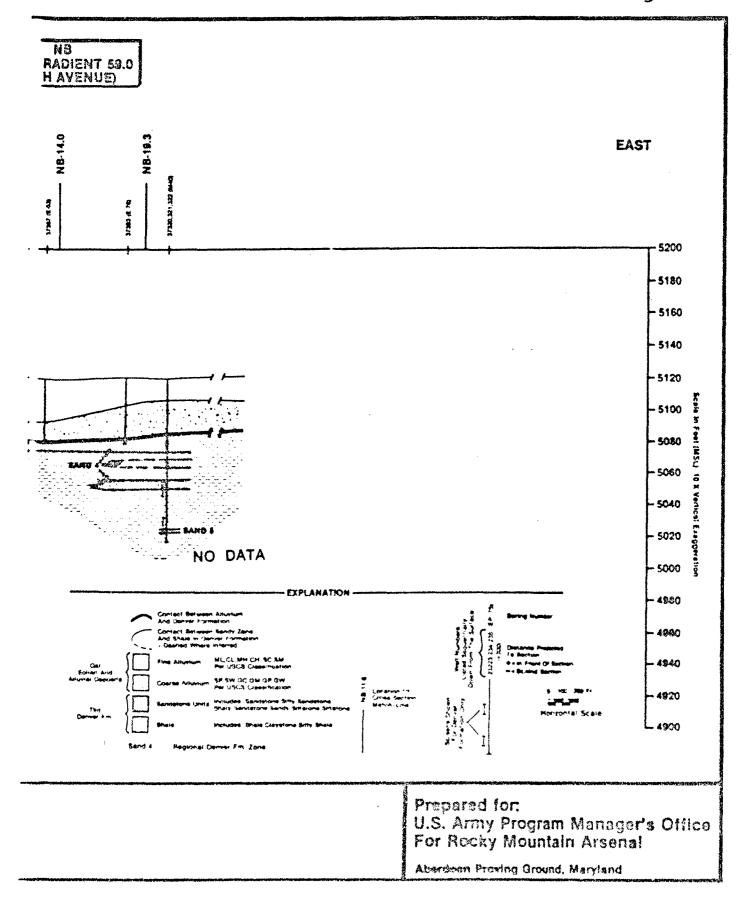


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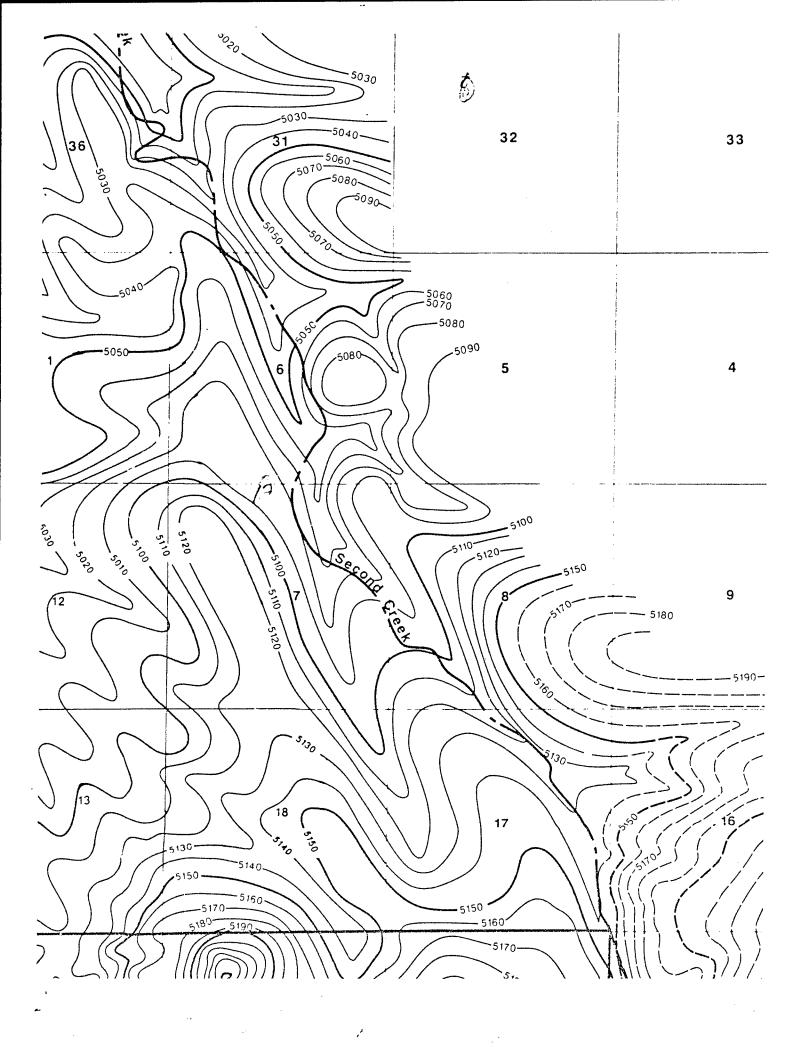
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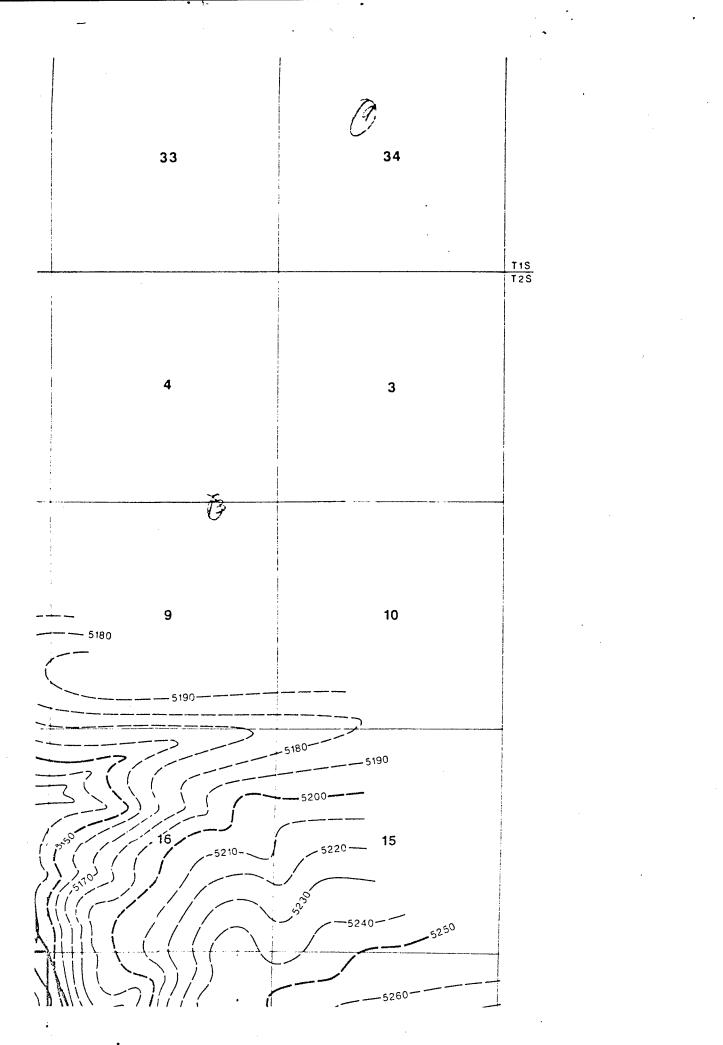
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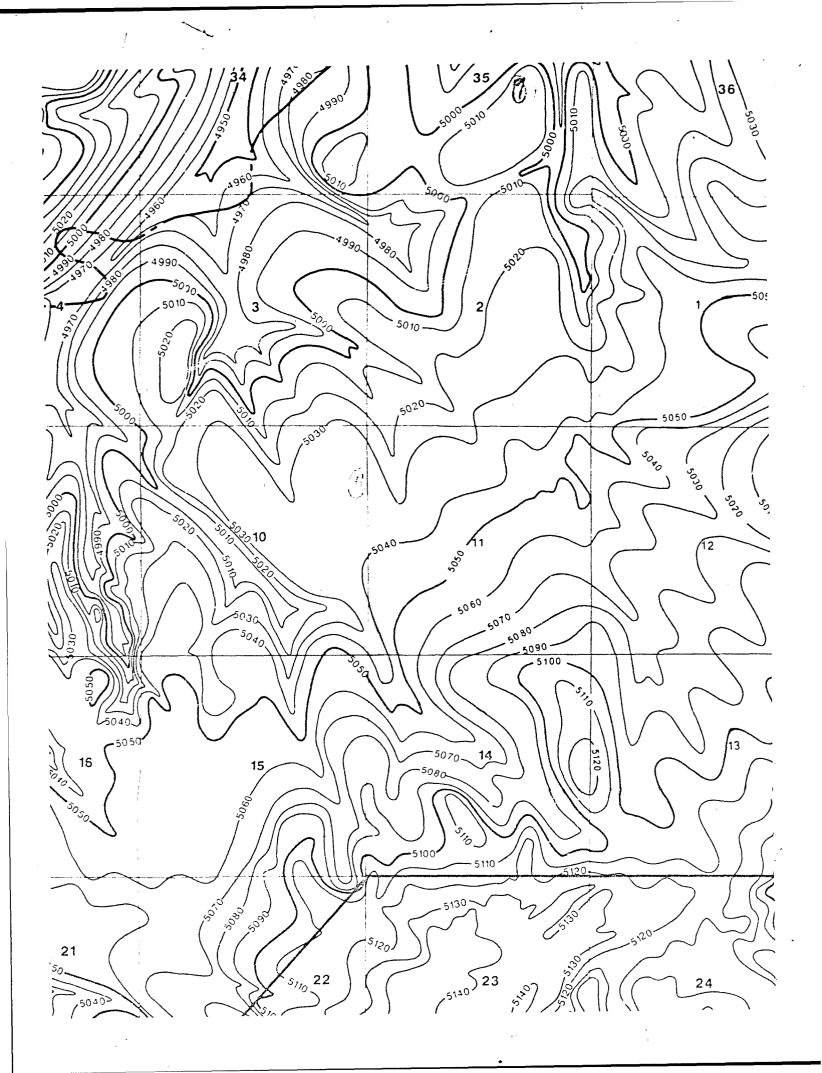
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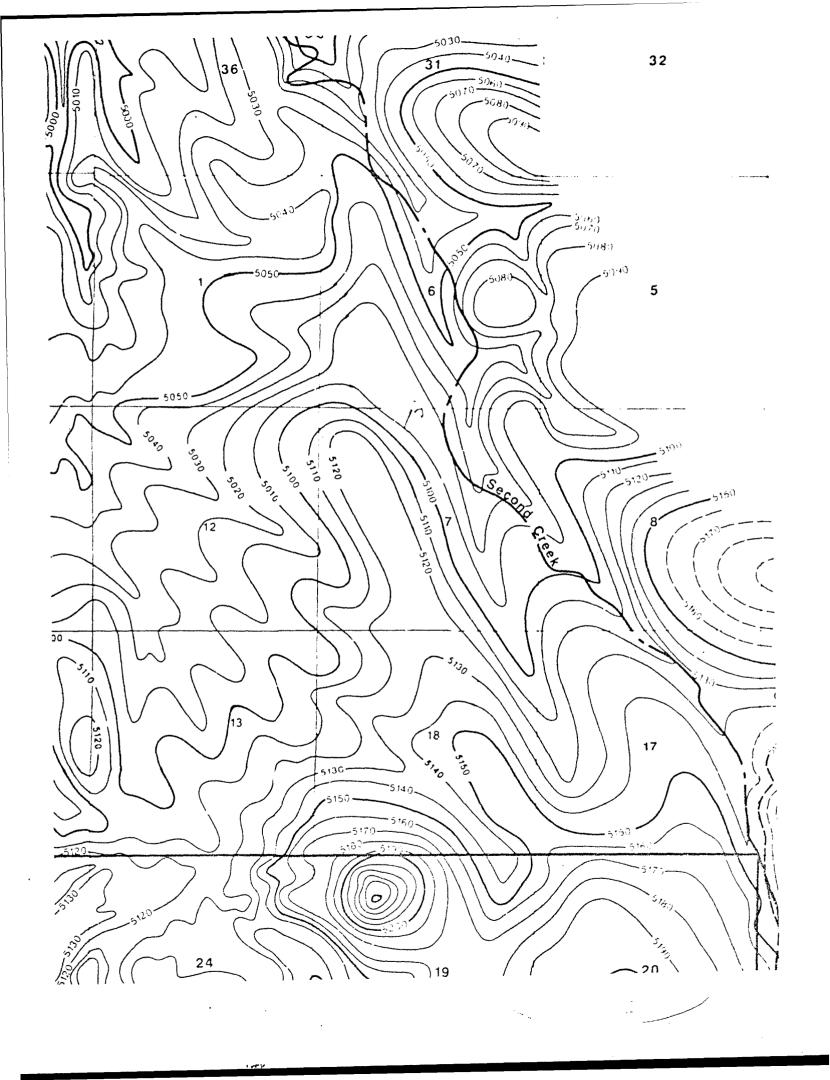
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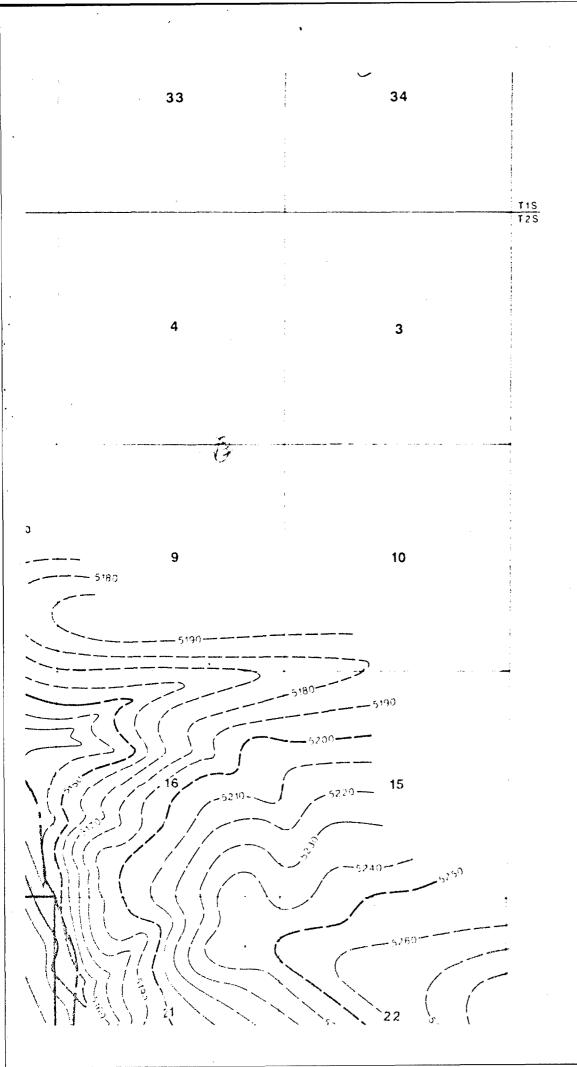




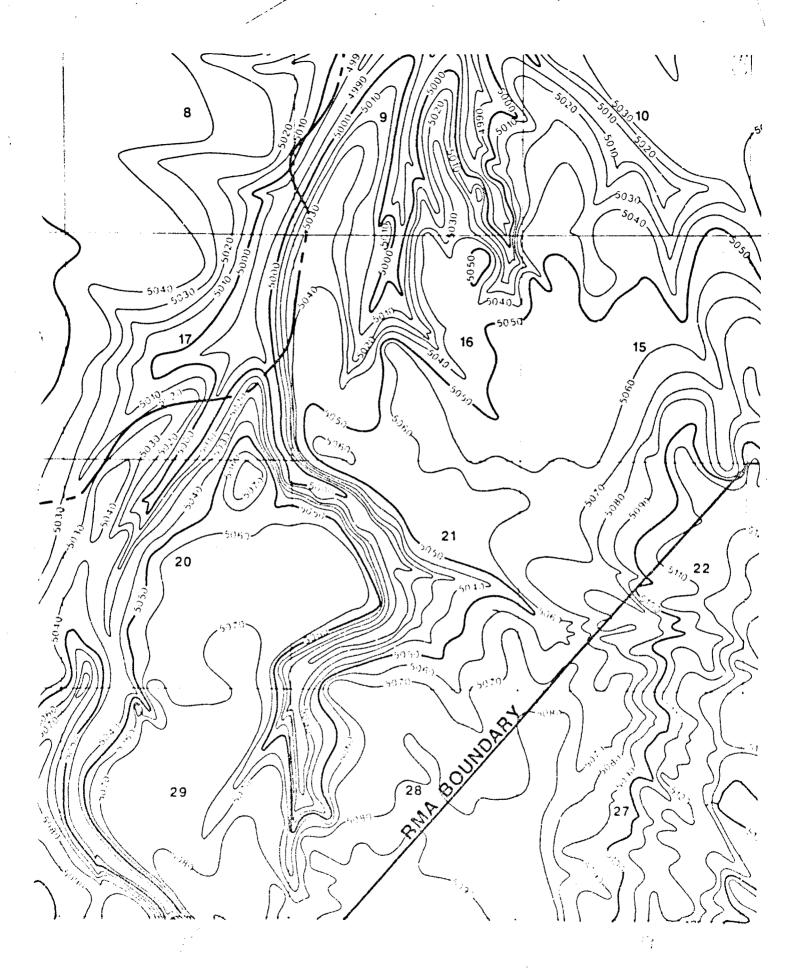


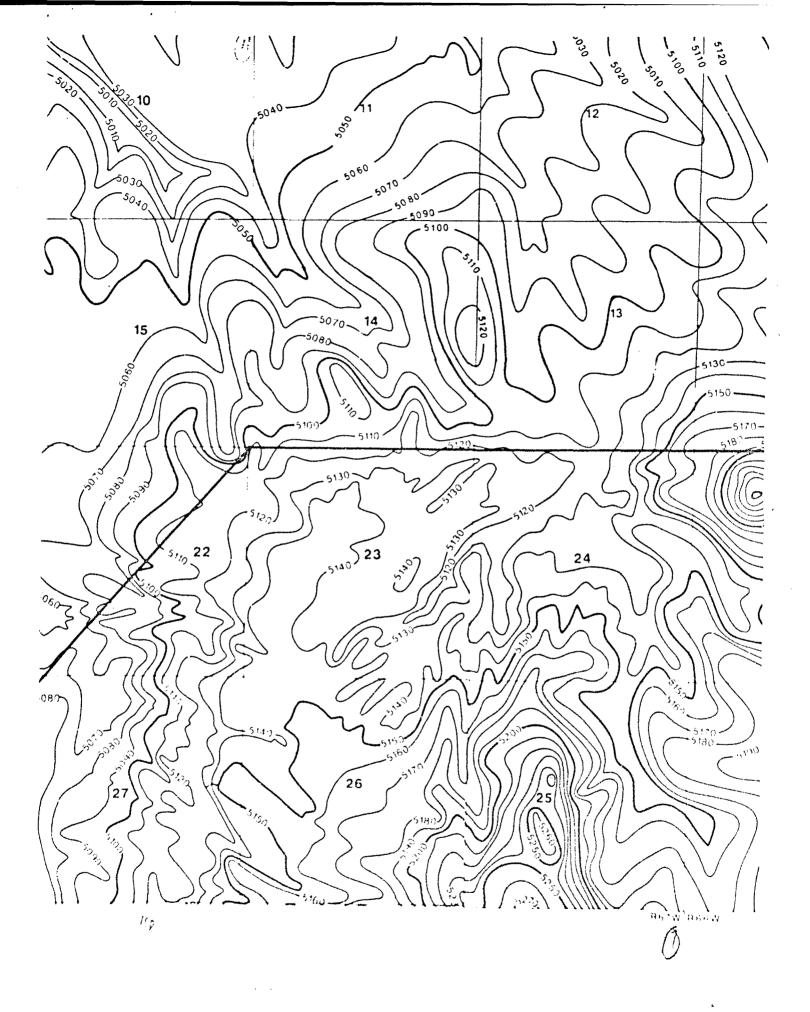


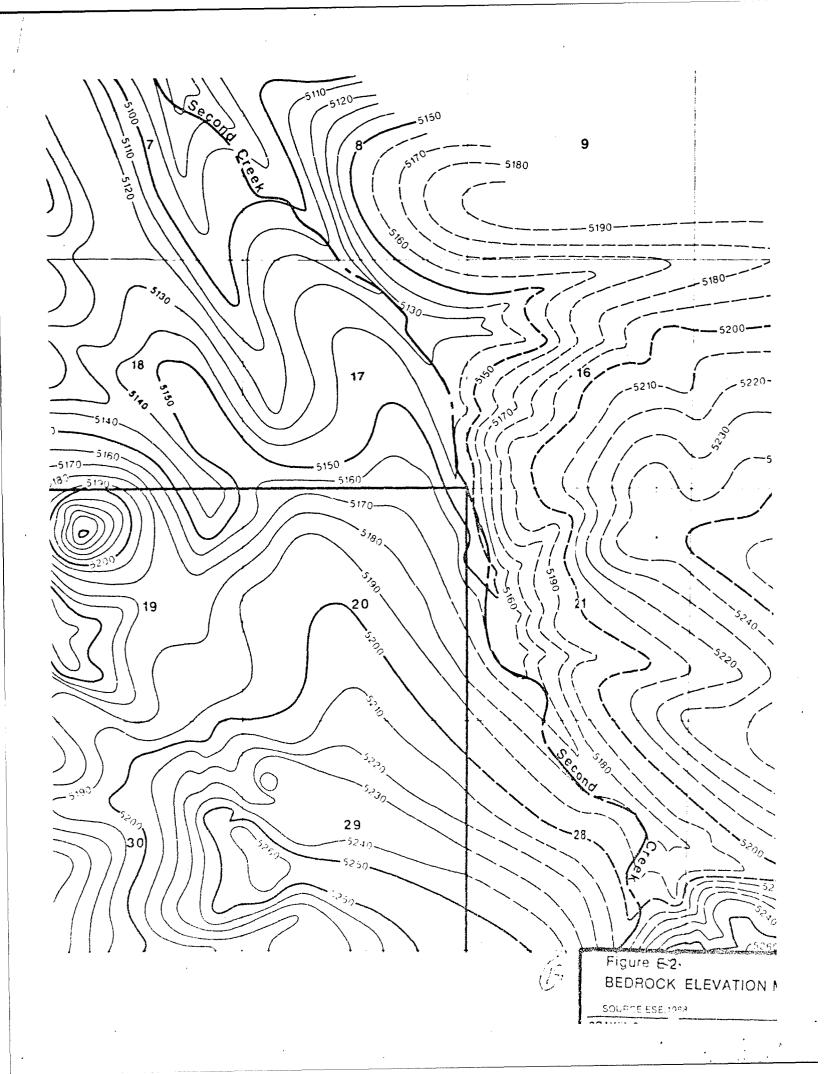


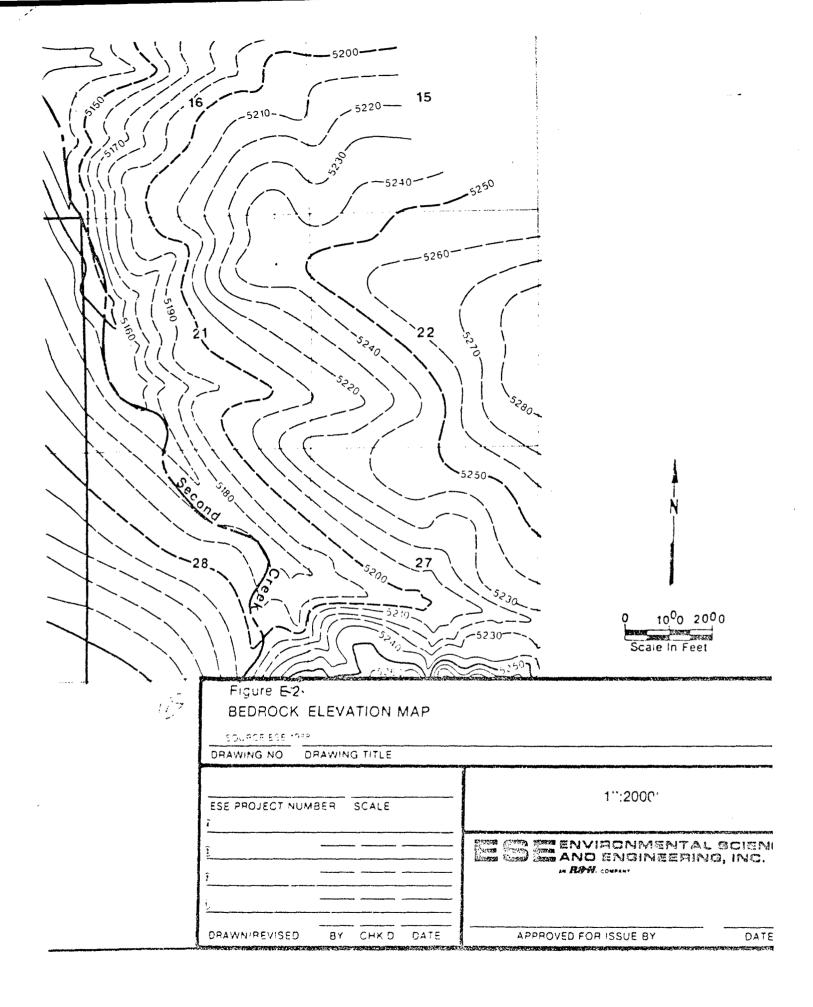


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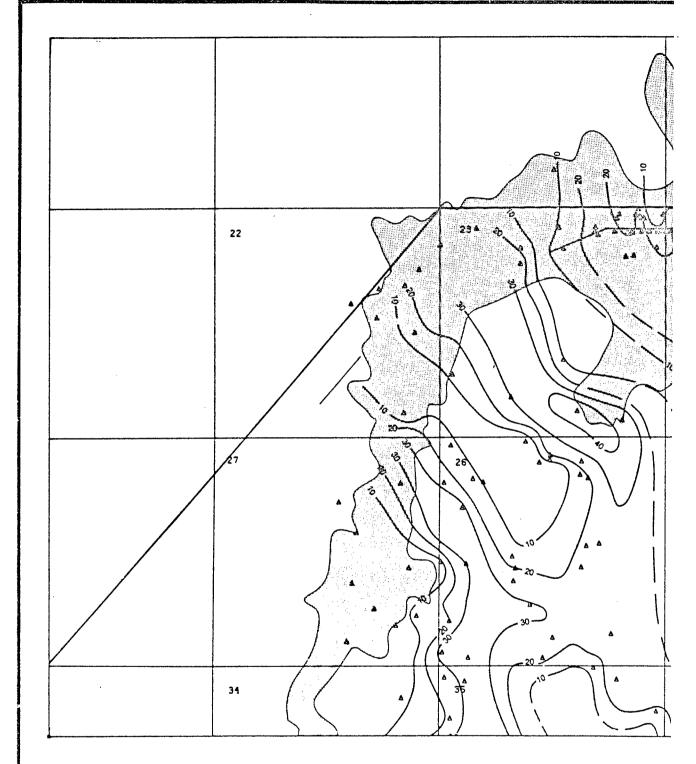


Figure E-3

NET SAND ISOPACH CONTOUR MAP OF REGIONAL DENVER FORMATION ZONE 2

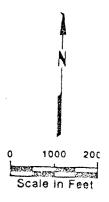
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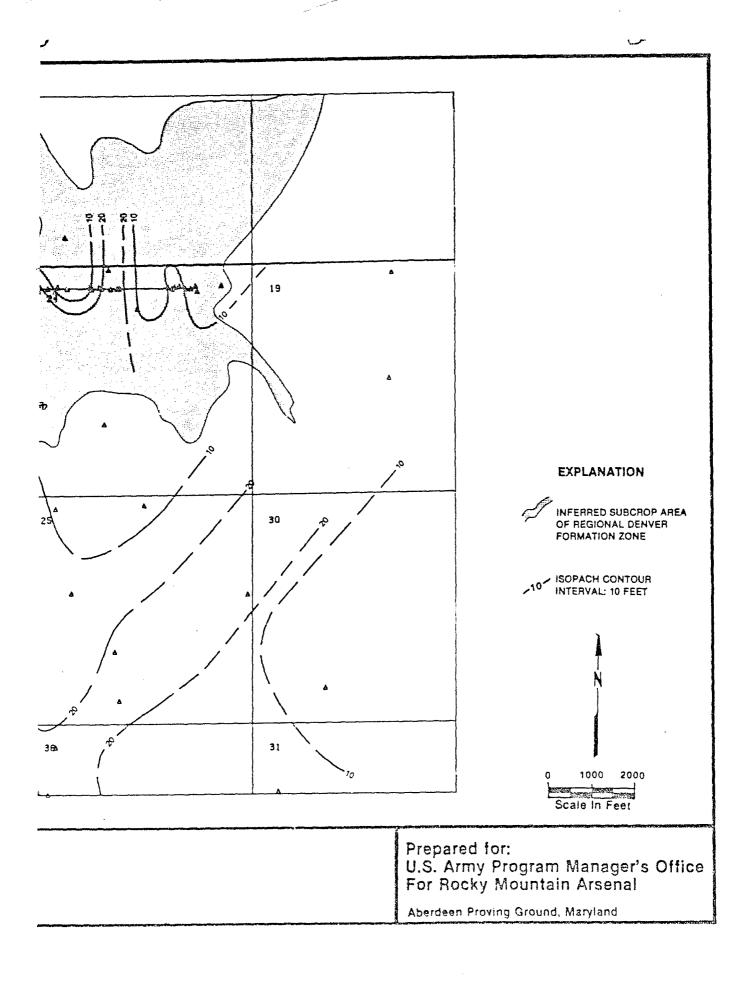


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Prepared for: U.S. Army Program Manager For Rocky Mountain Arsenal

Aberdeen Proving Ground, Maryland

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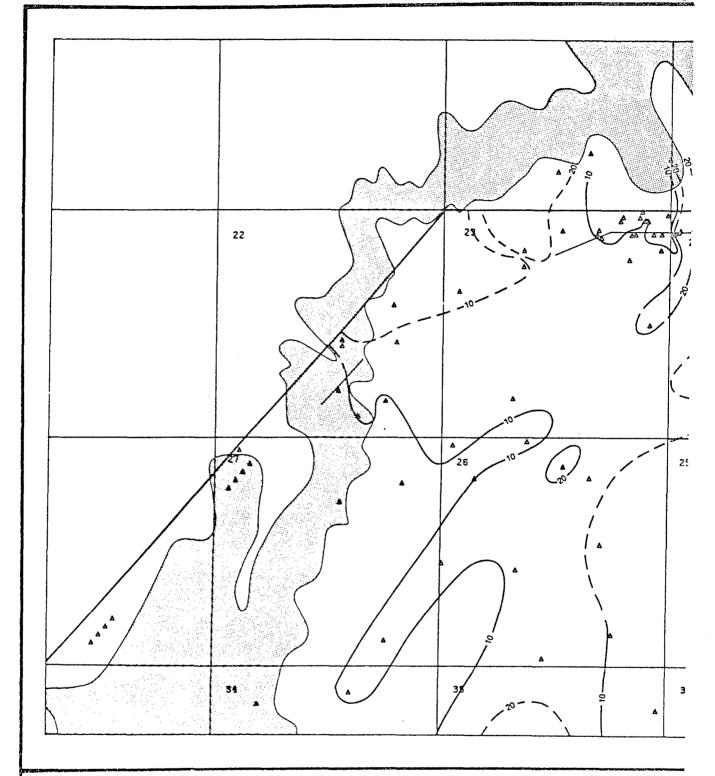


Figure E-4
NET SAND ISOPACH CONTOUR MAP OF REGIONAL DENVER FORMATION ZONE 3

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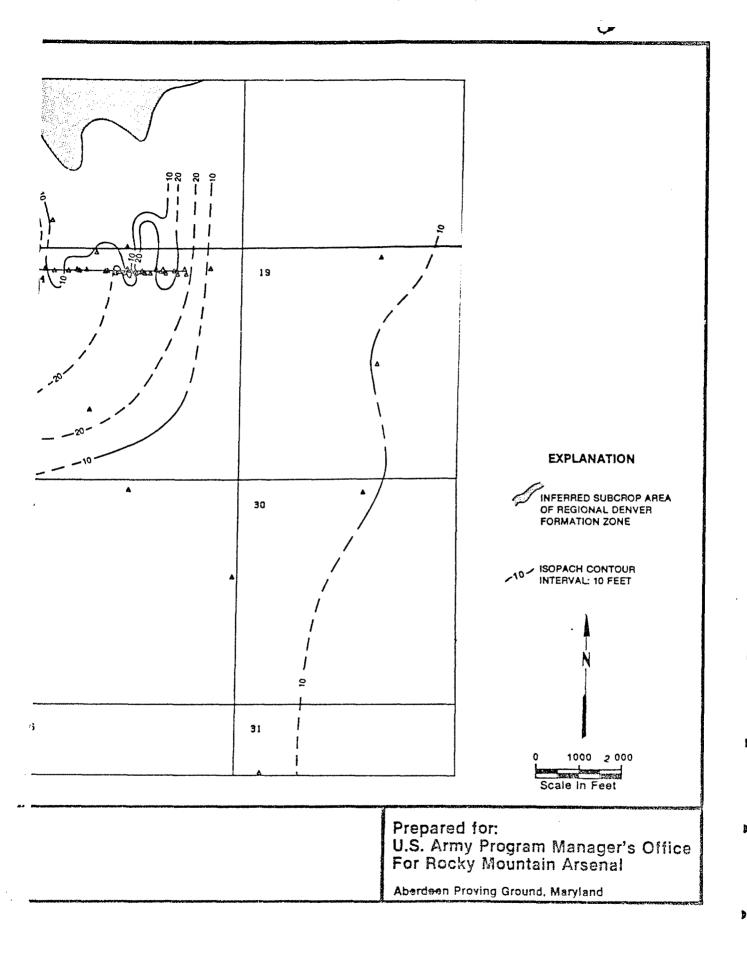
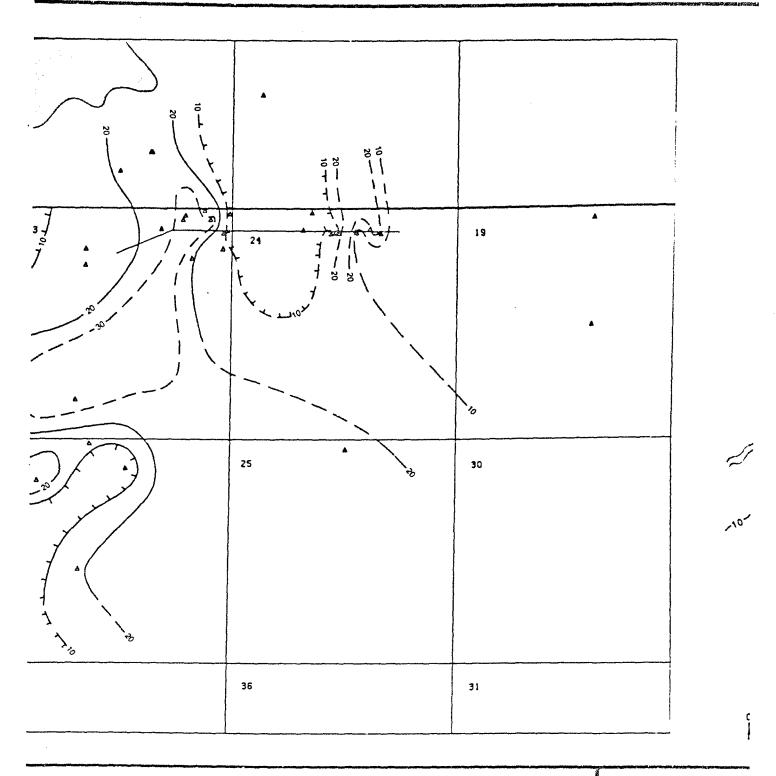


Figure E-5
NET SAND ISOPACH CONTOUR MAP OF REGIONAL DENVER FORMATION ZONE 4

SOURCE: ESE, 1988

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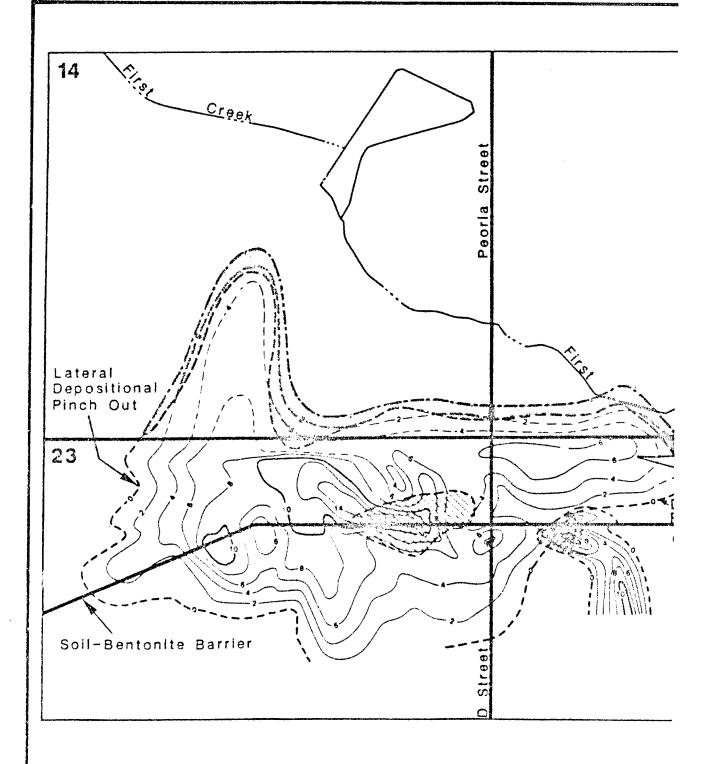
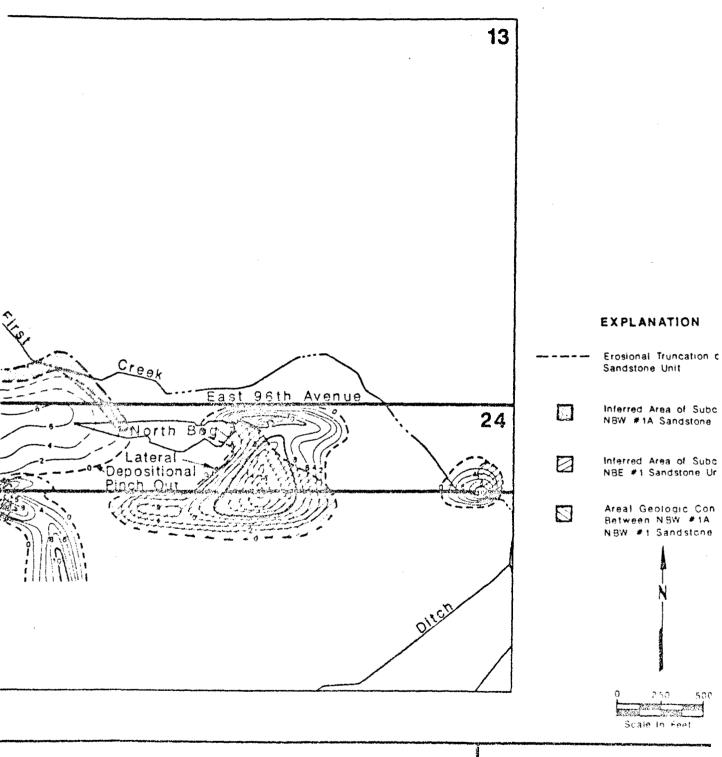


Figure E-6
ISOPACH MAP OF THE NBW#1A AND NBE#1 SANDSTONE UNITS

SOURCE HEA 1988



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  - Areal Geologic Contact Between NBW #1A and NBW #1 Sandstone Units

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Prepared for: U.S. Army Program Manager's Office For Rocky Mountain Arsenal

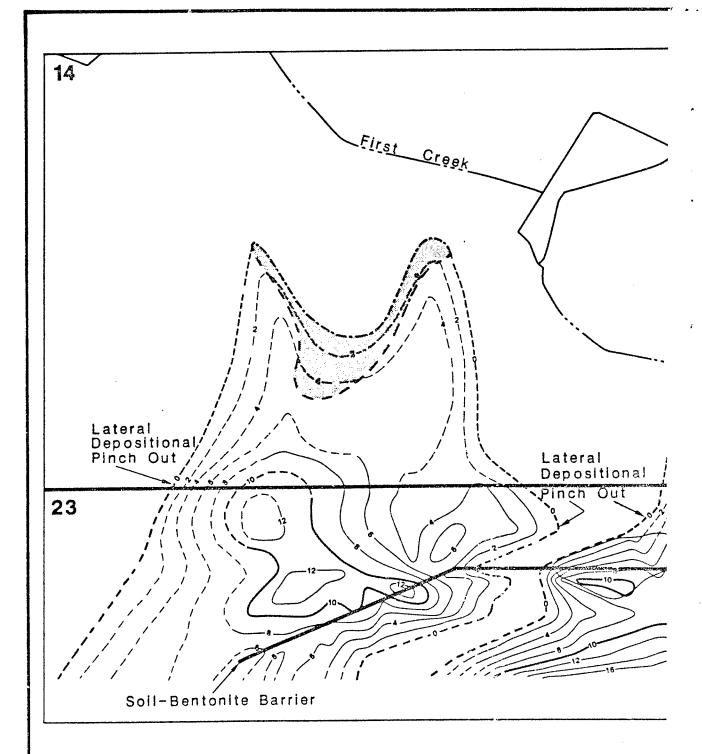
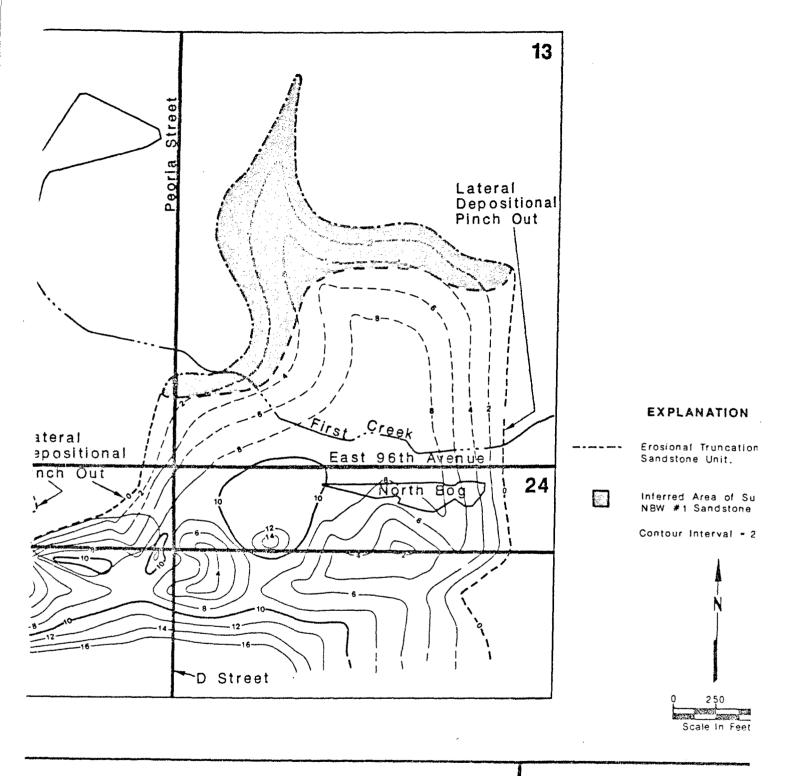
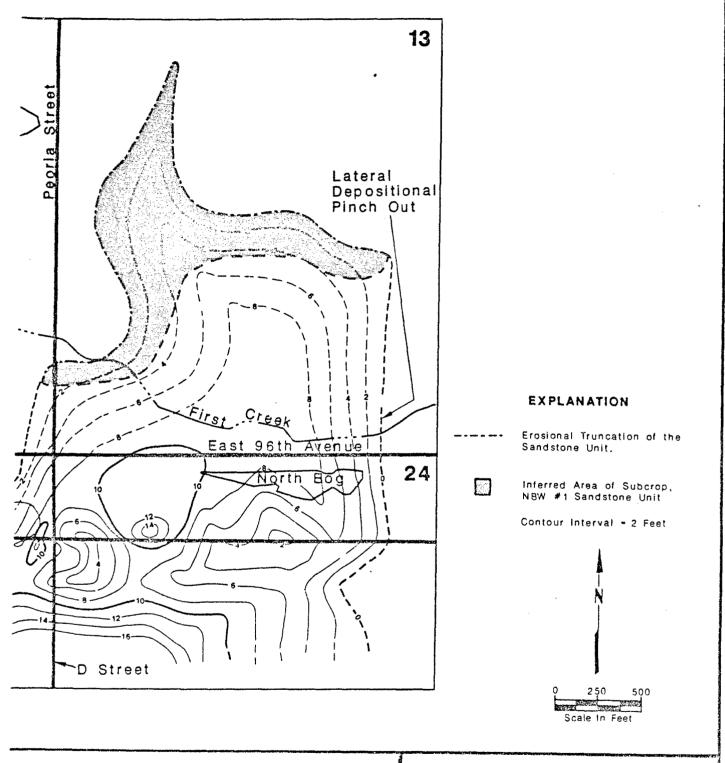


Figure E-7
ISOPACH MAP OF THE NBW#1 SANDSTONE UNIT

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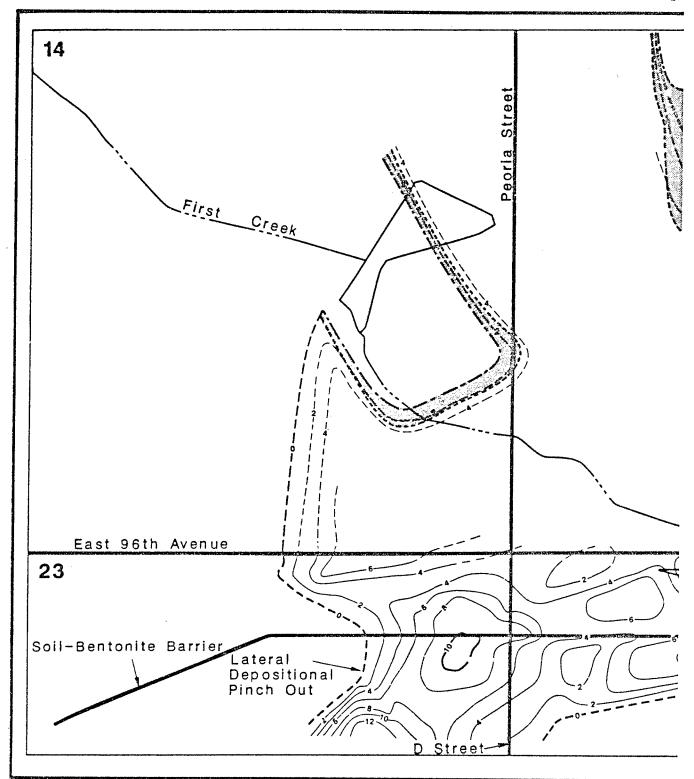
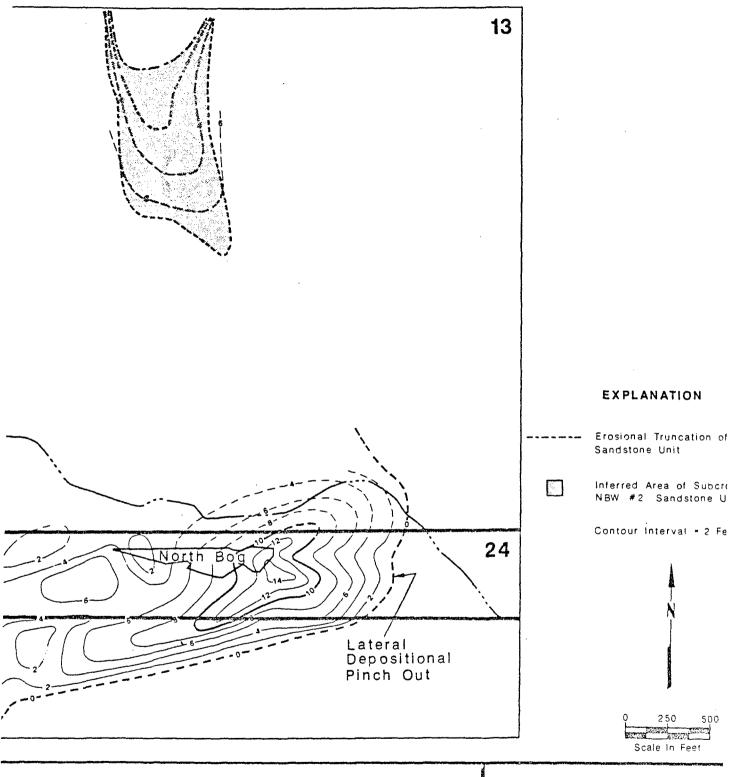


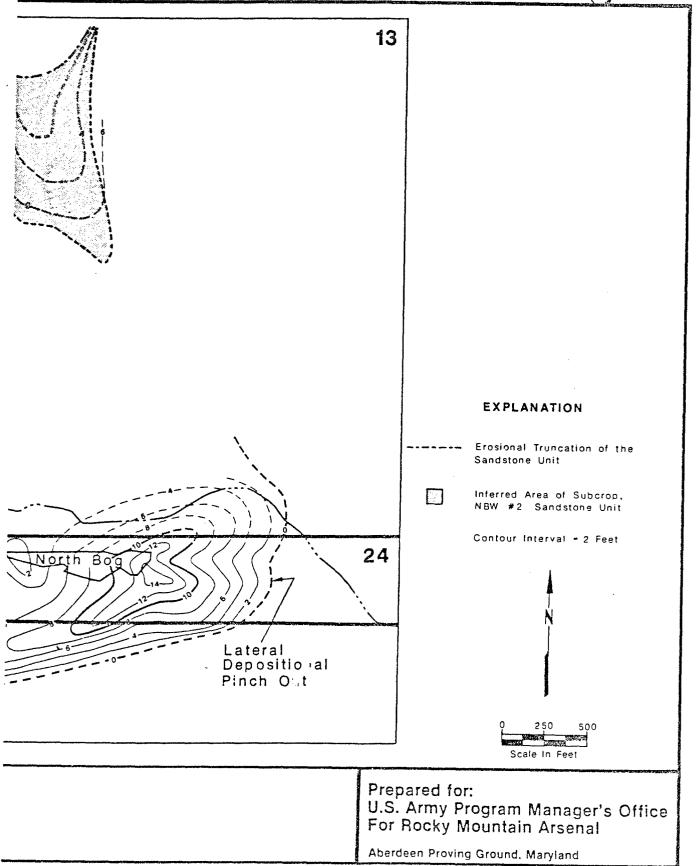
Figure E-8
ISOPACH MAP OF THE NBW#2 SANDSTONE UNIT

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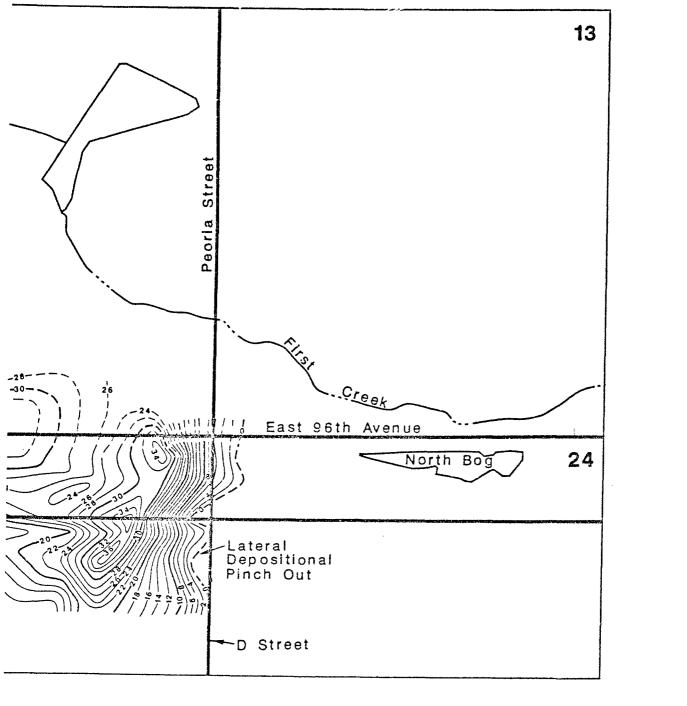


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Figure E-9
ISOPACH MAP OF THE NEW#3 SANDSTONE UNIT

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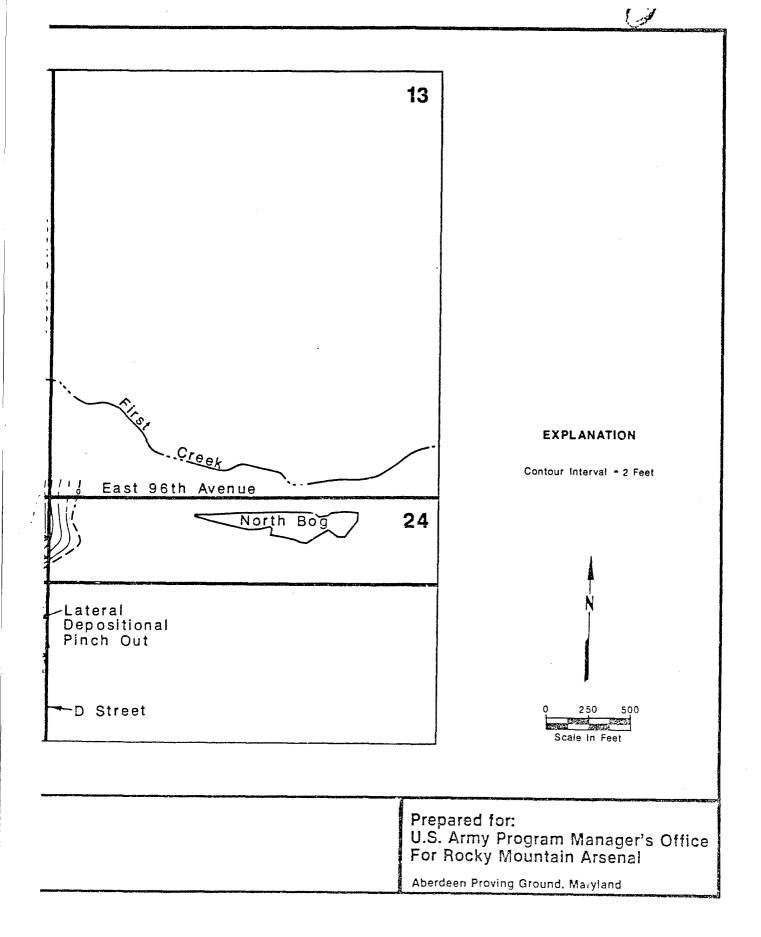
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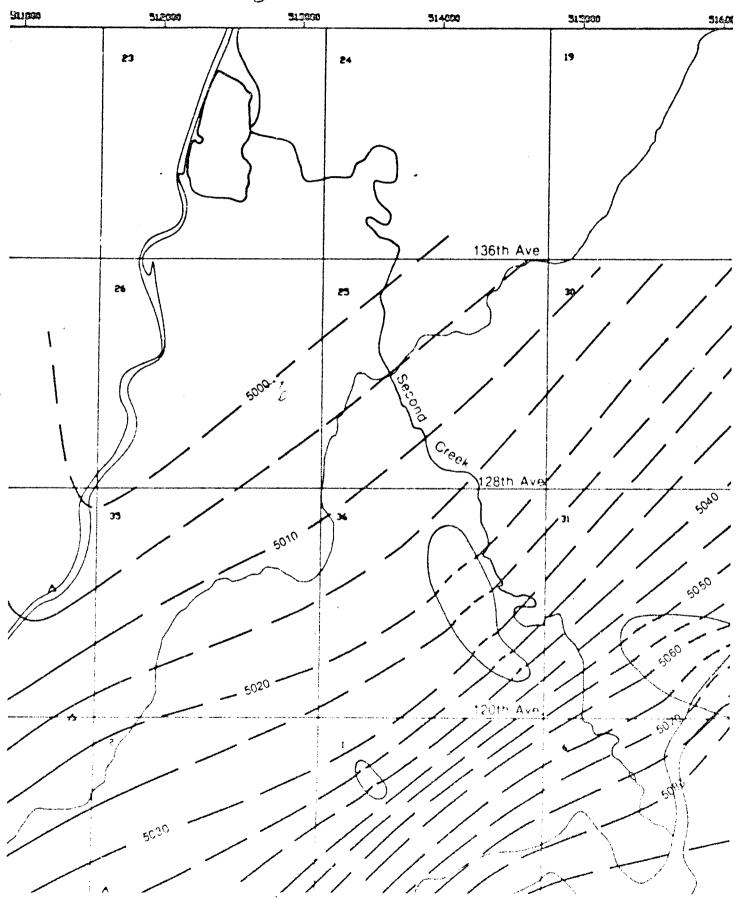
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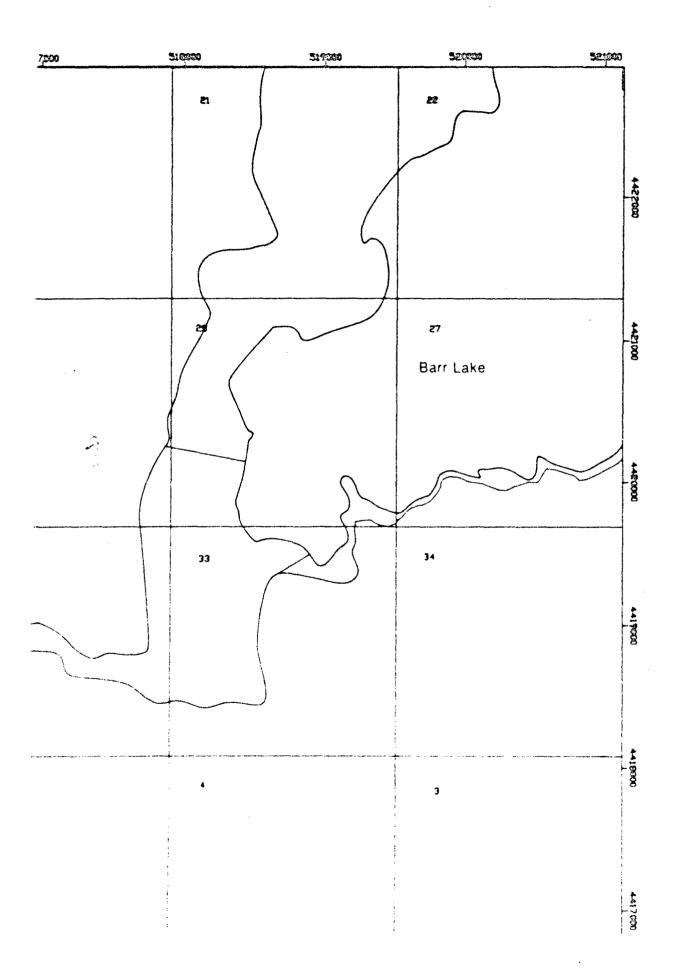


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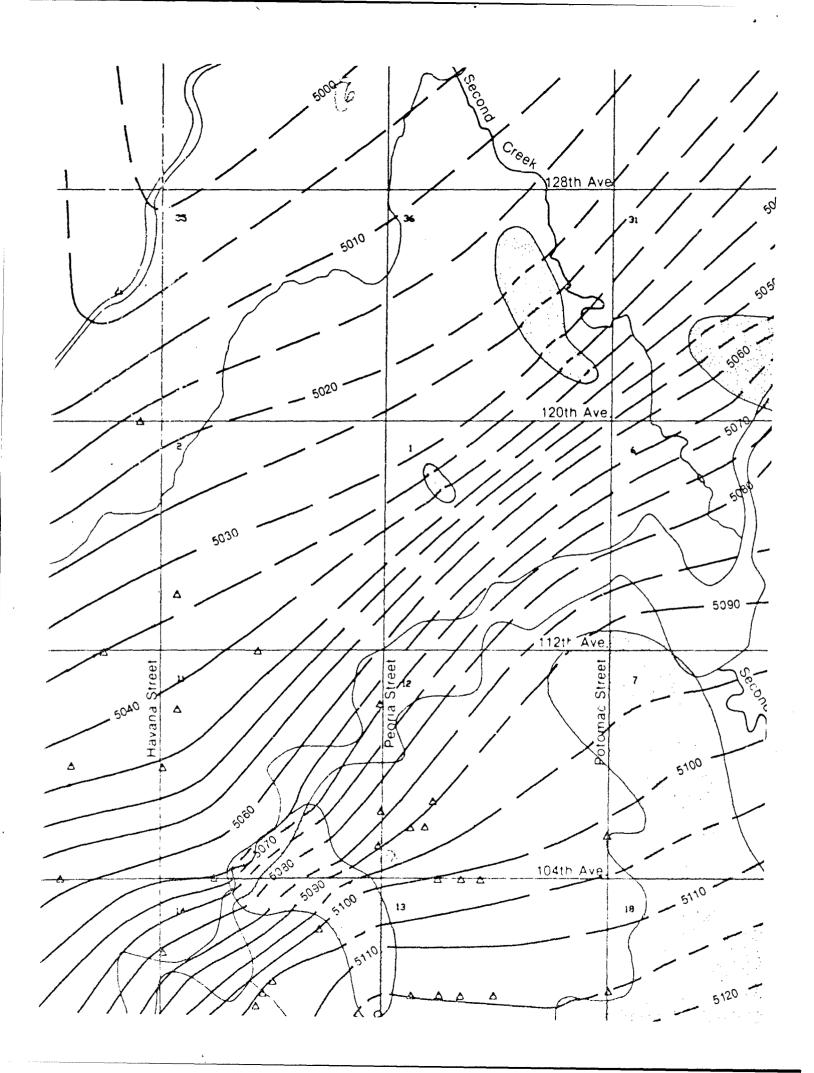


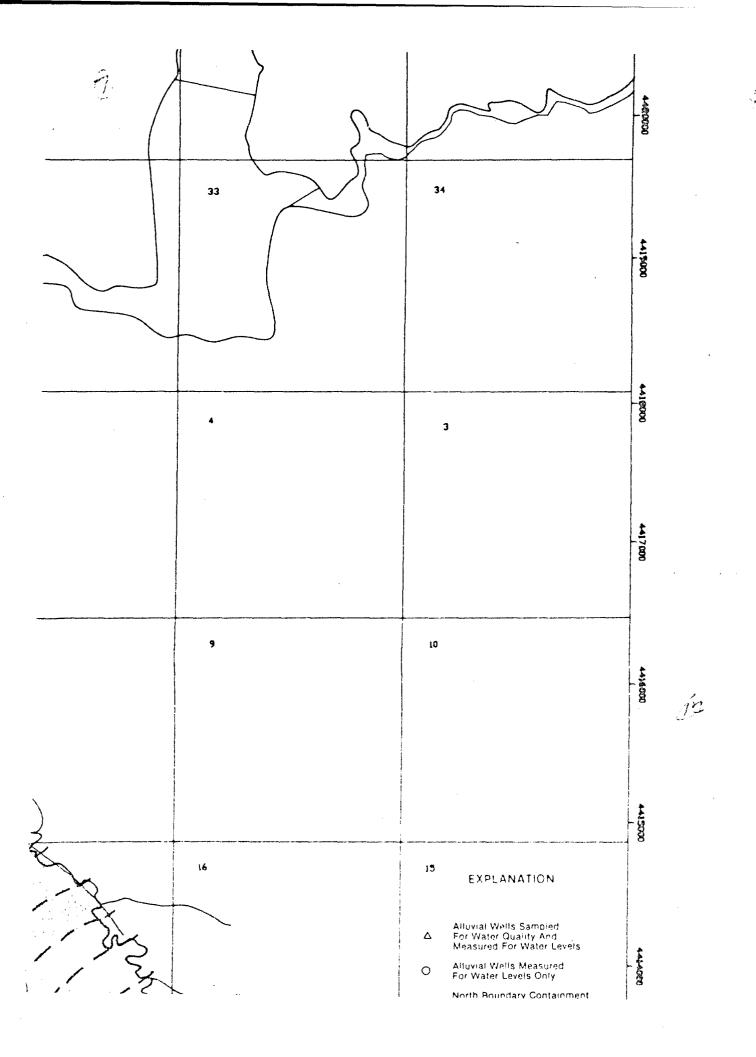
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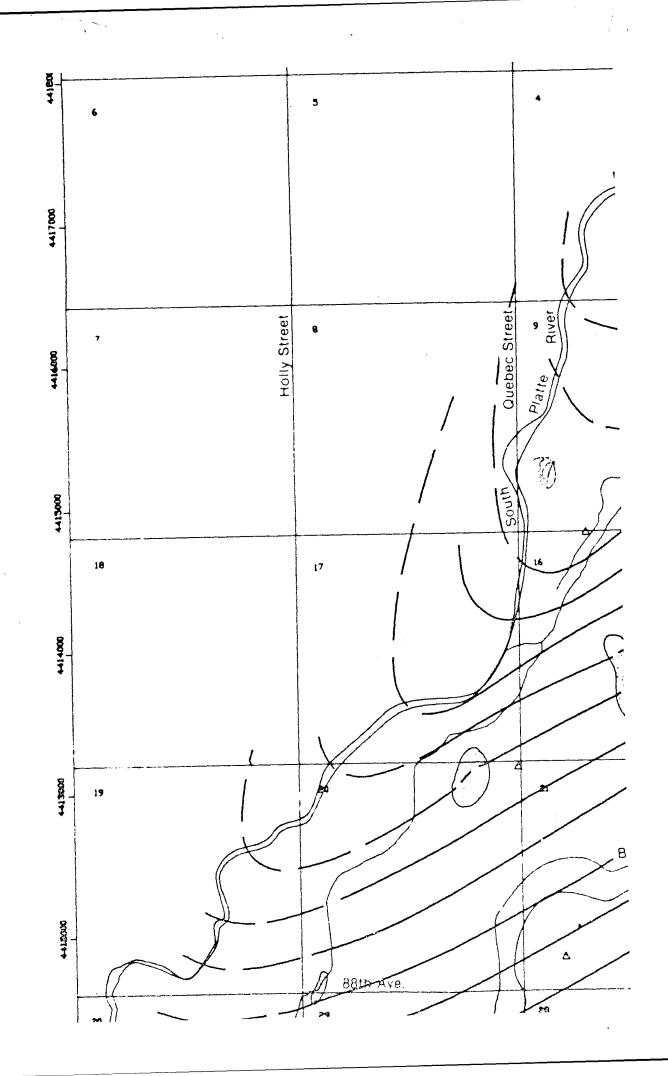
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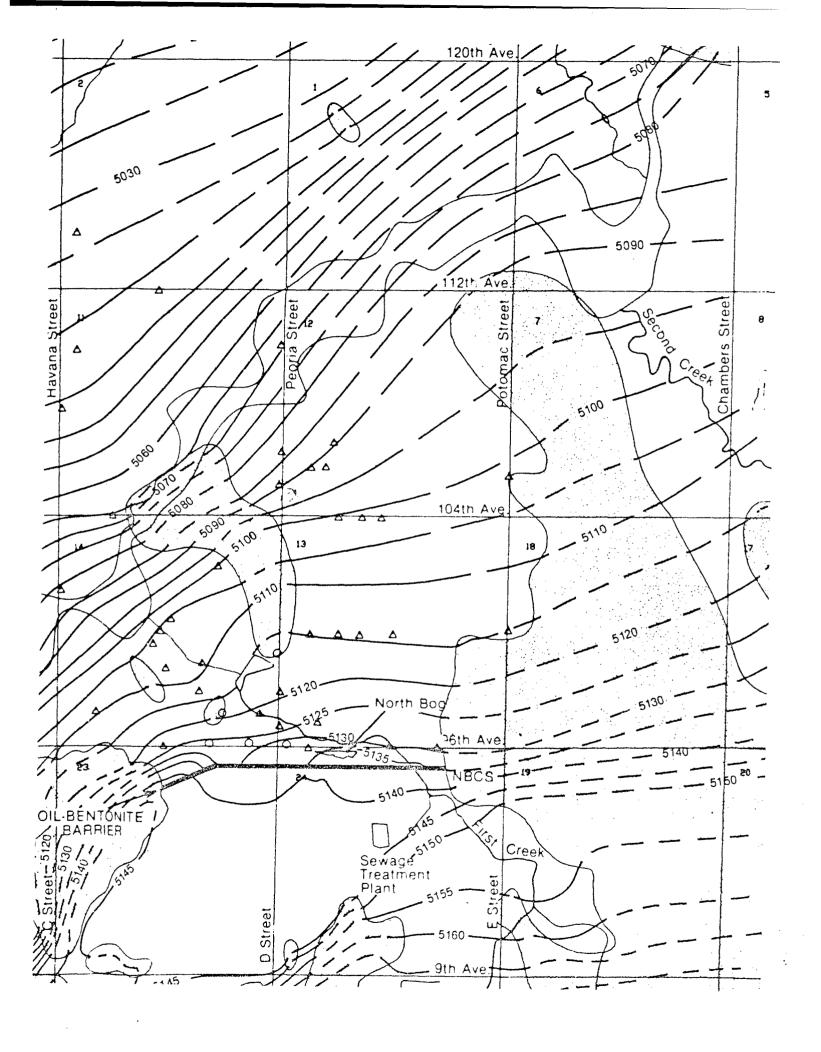
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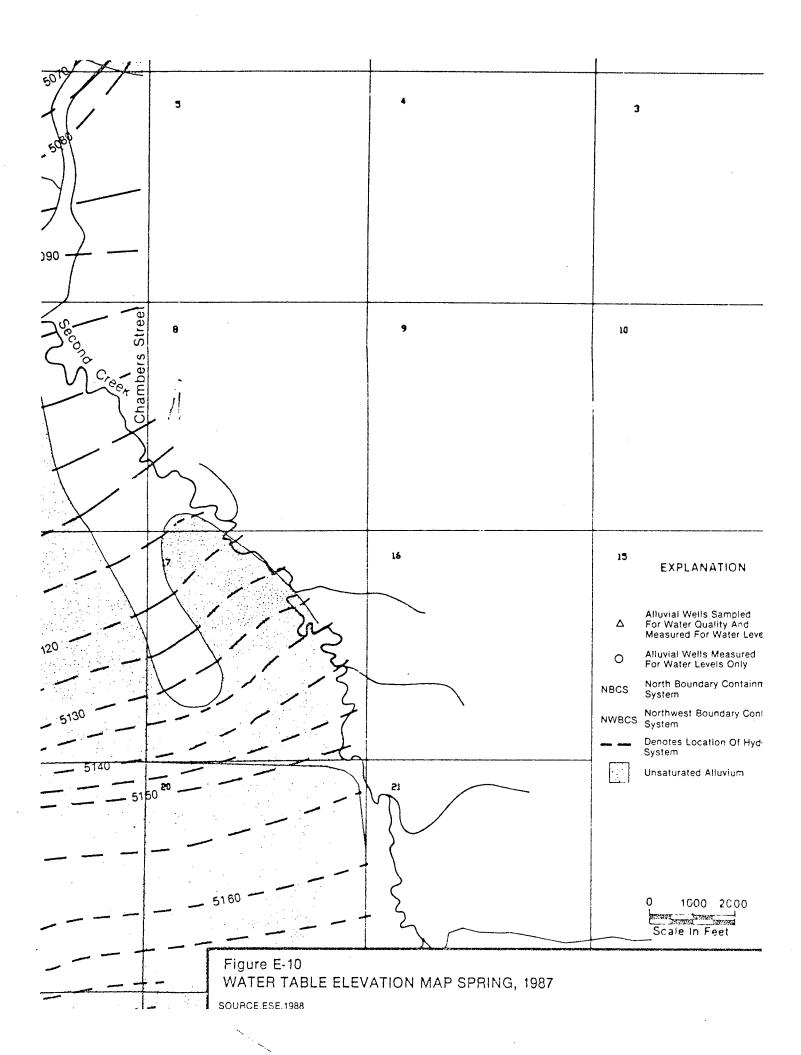
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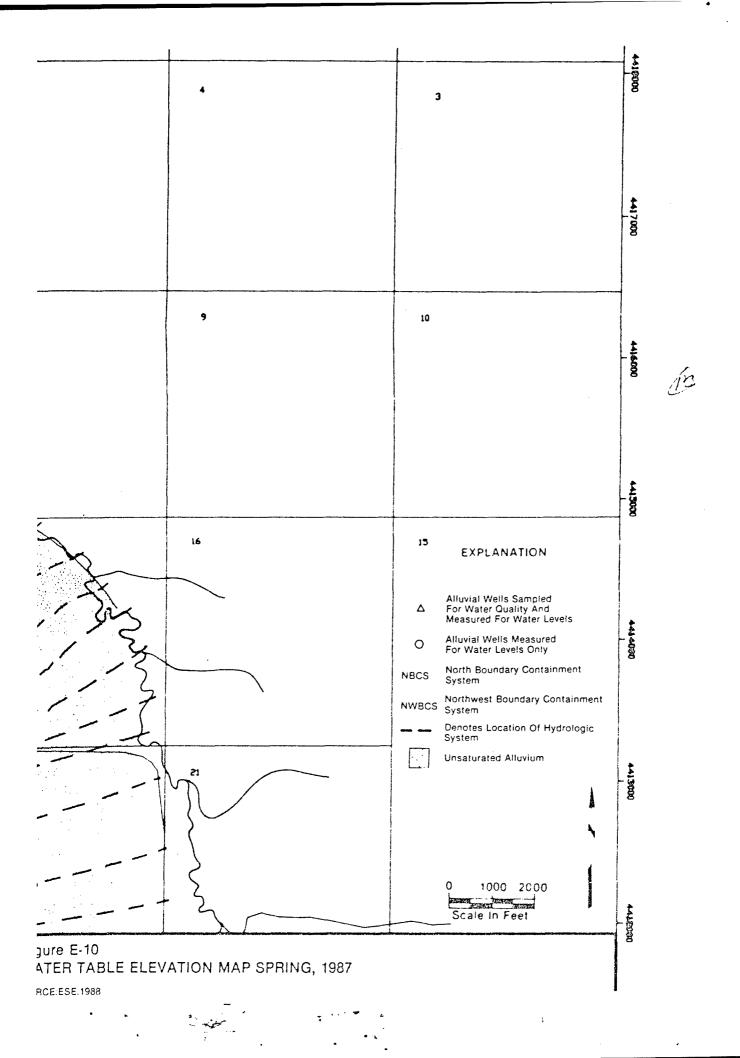


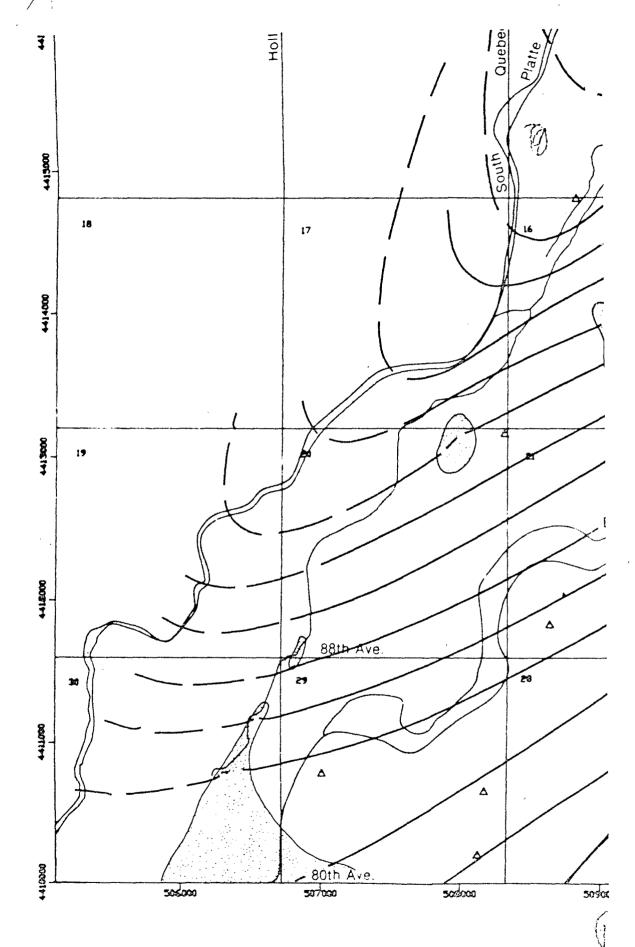






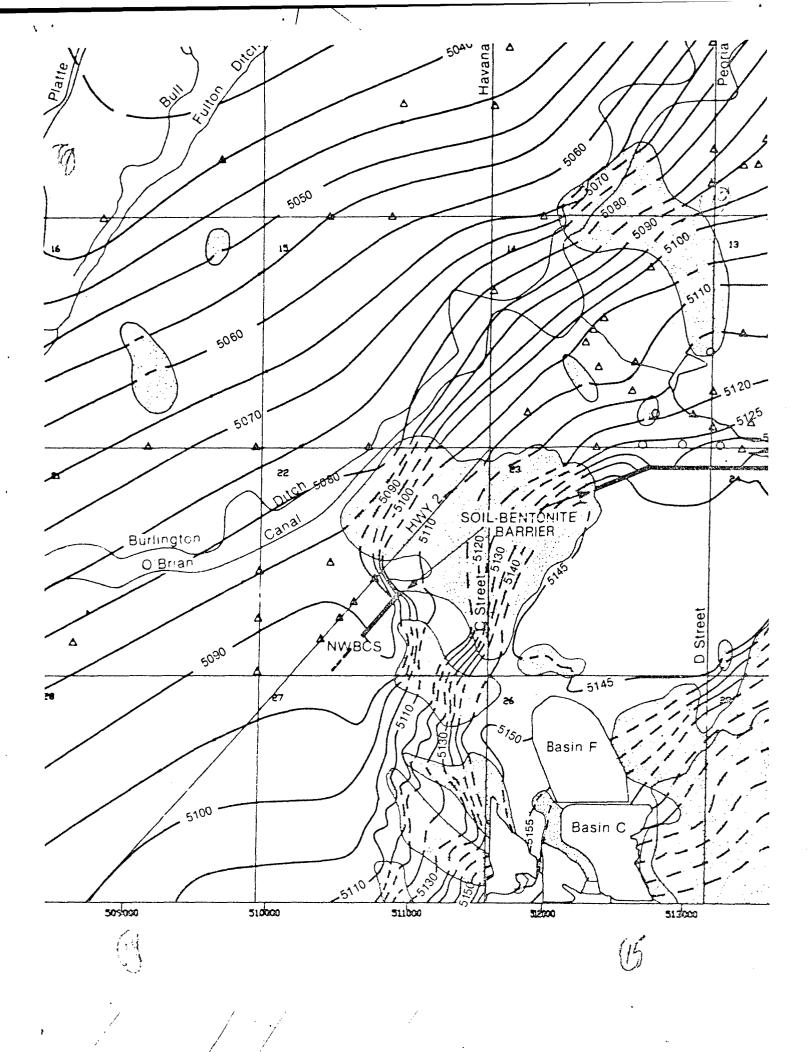


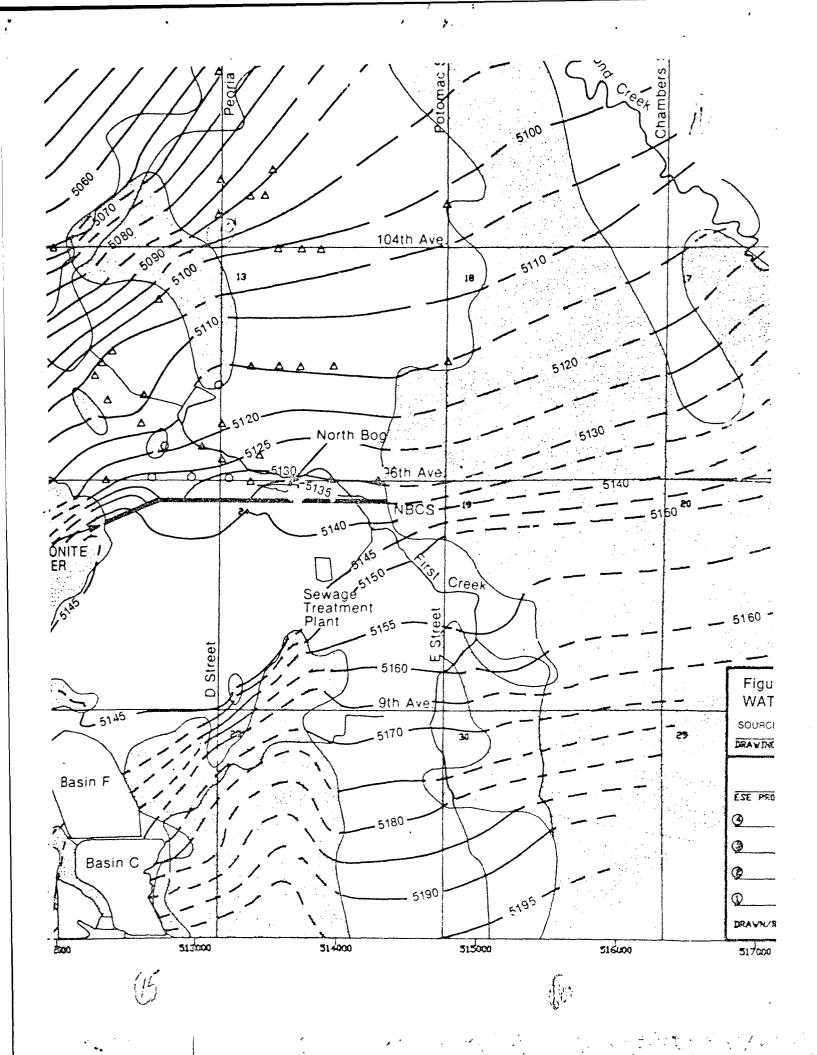


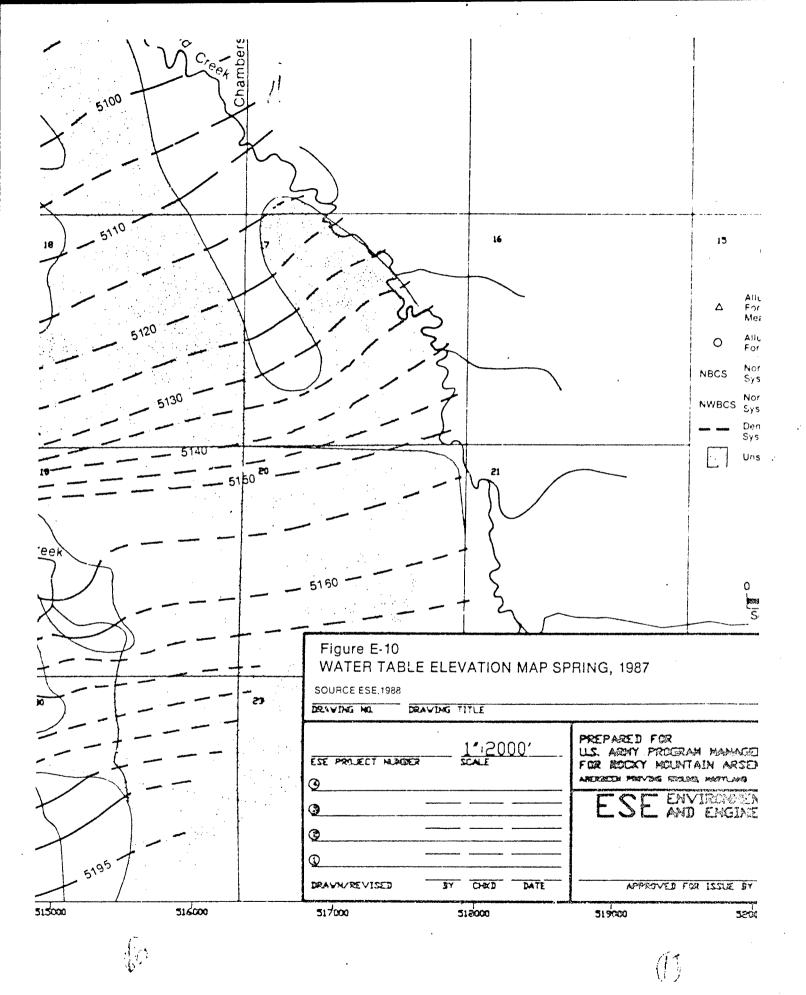


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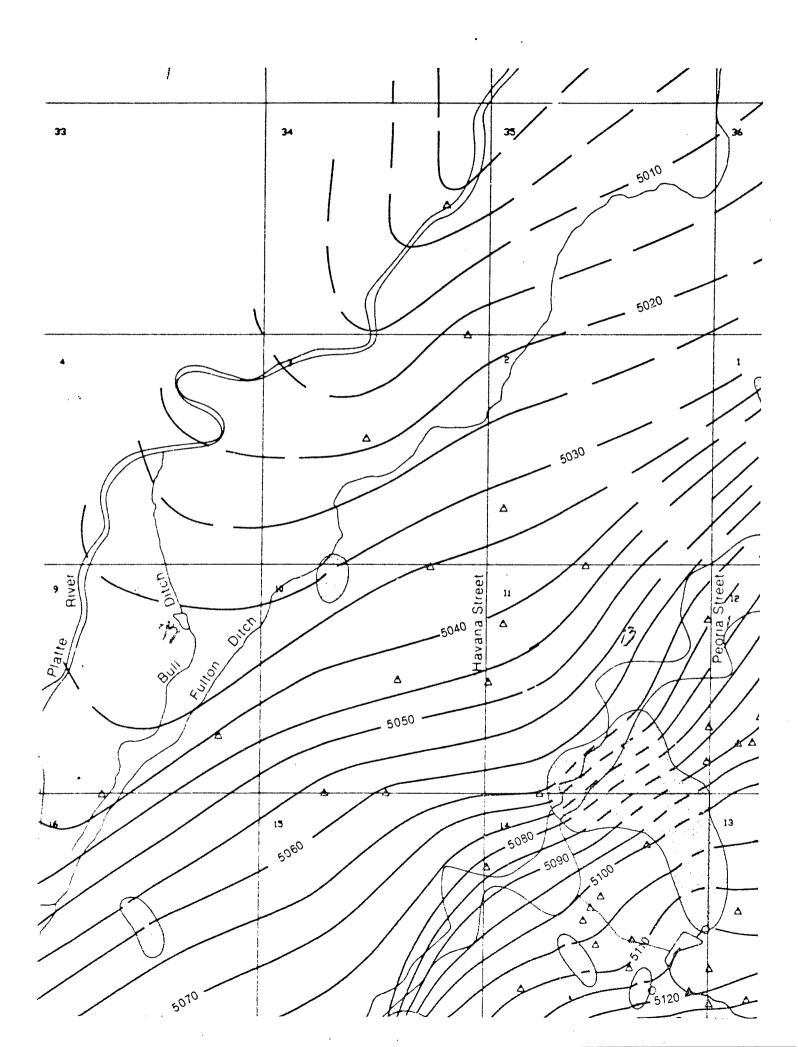
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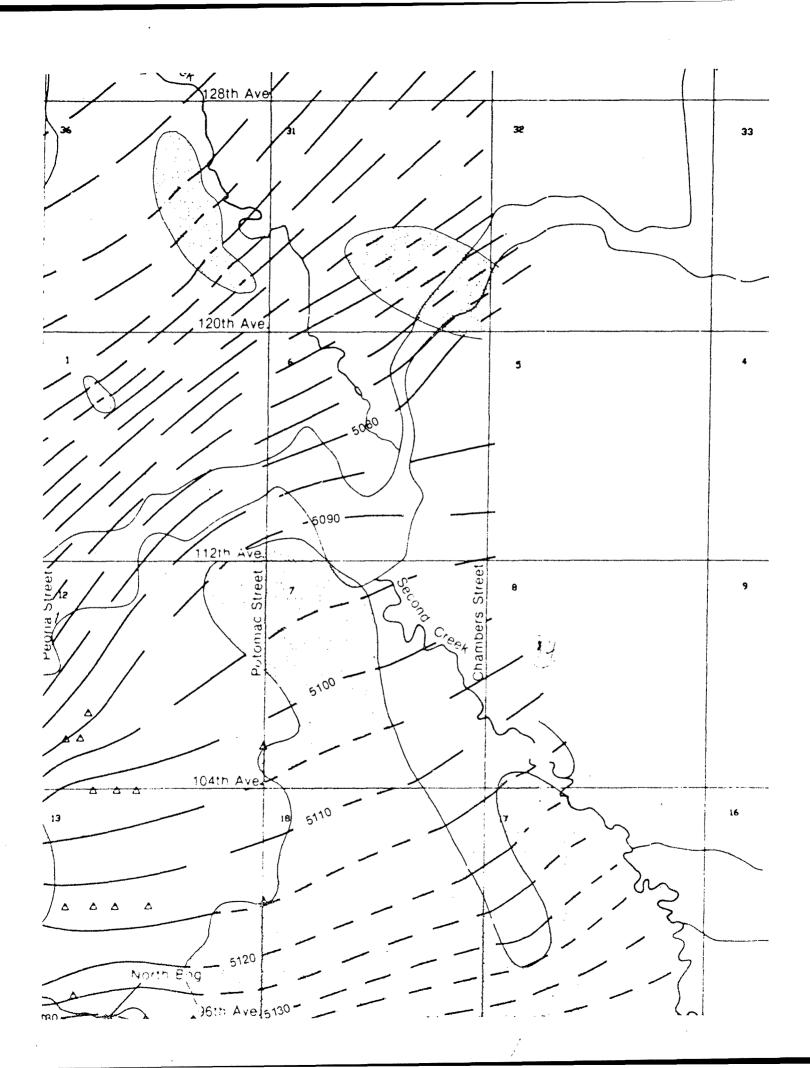
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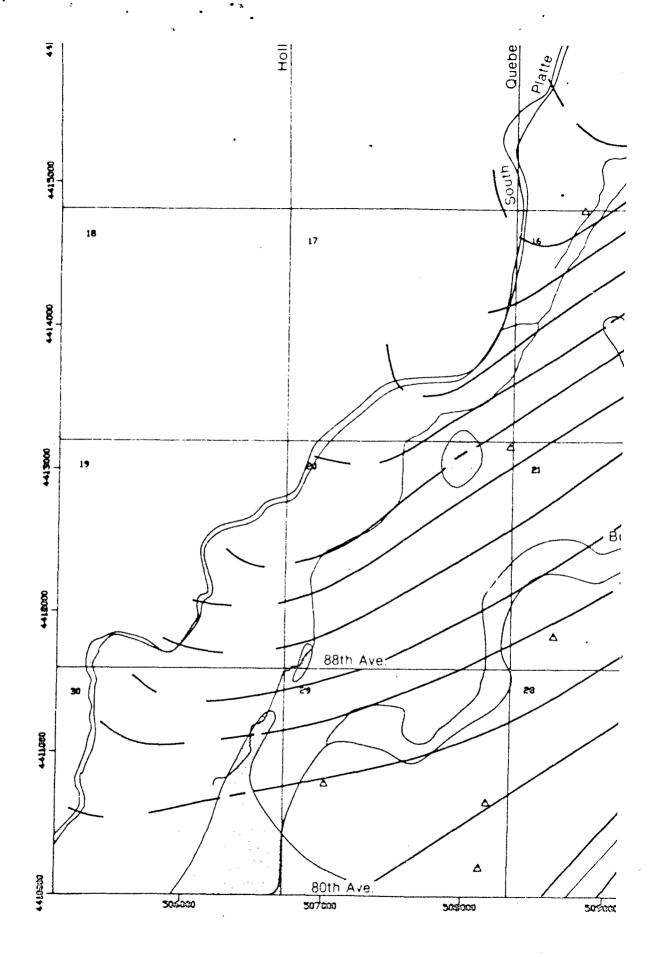
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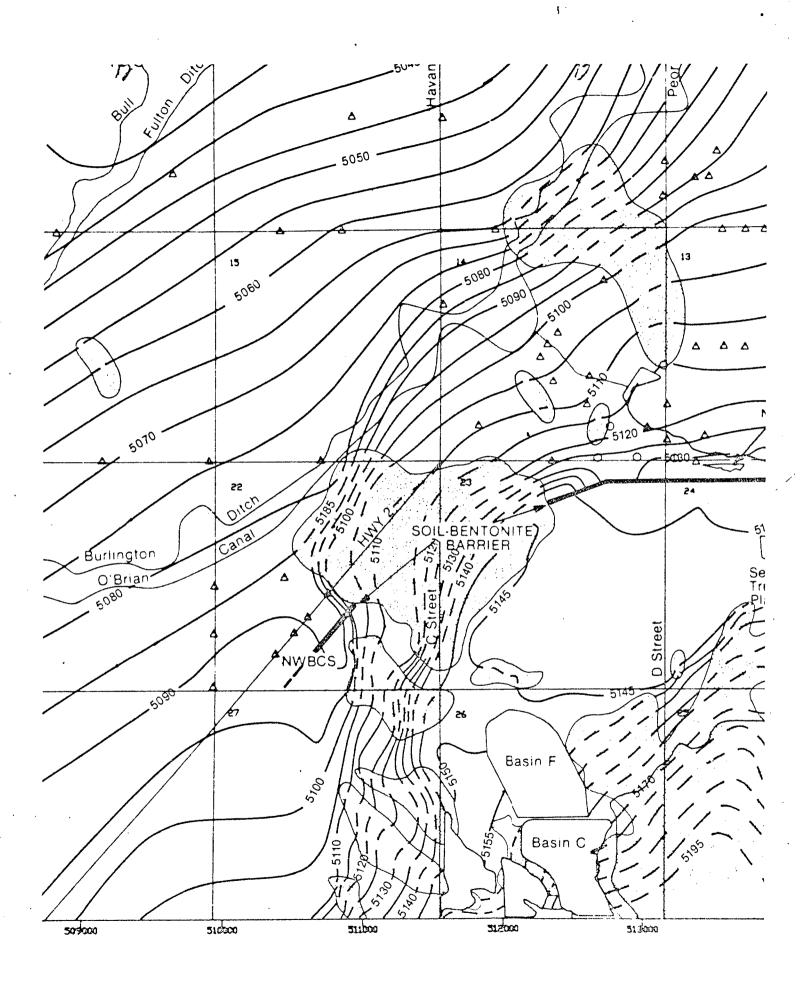
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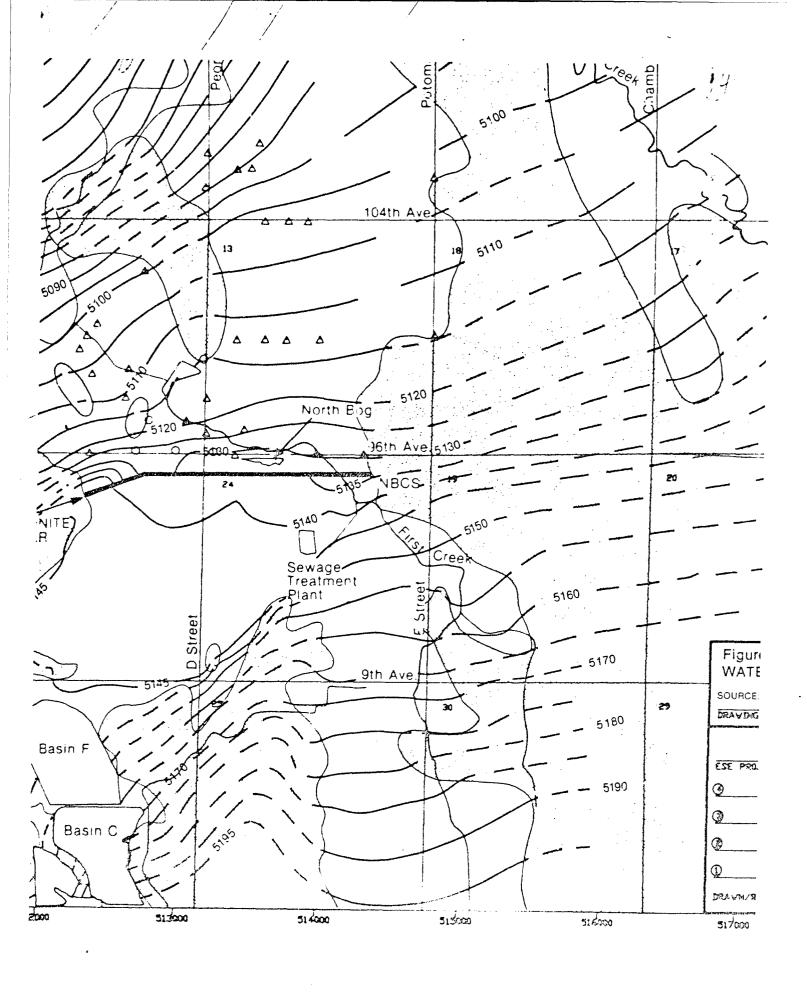
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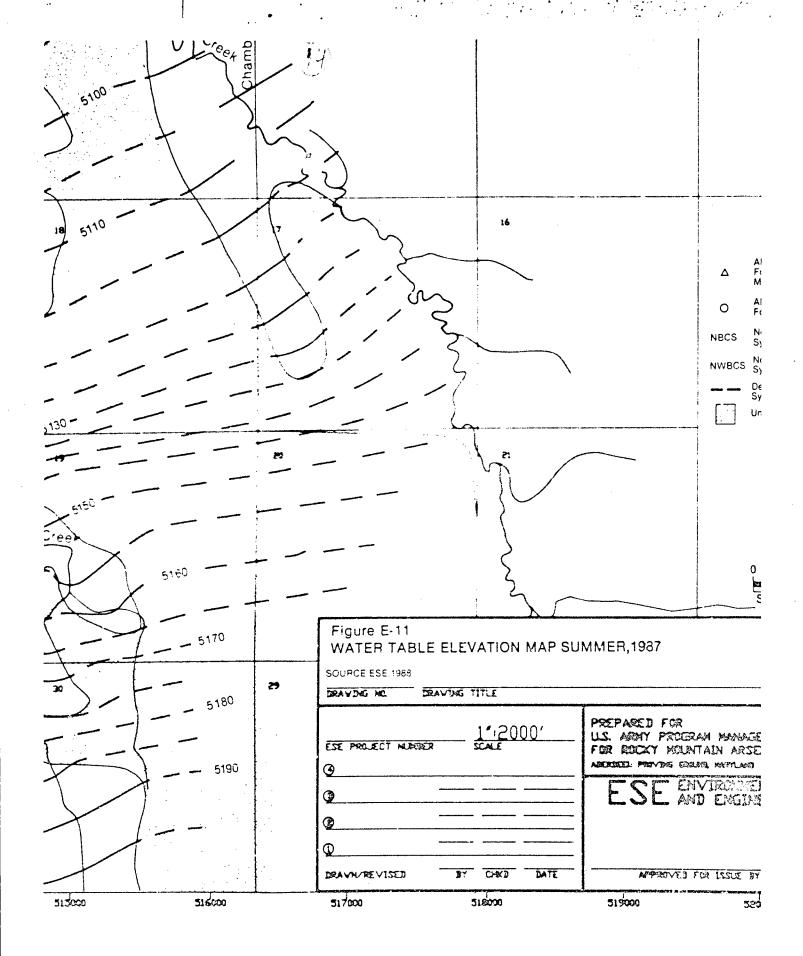
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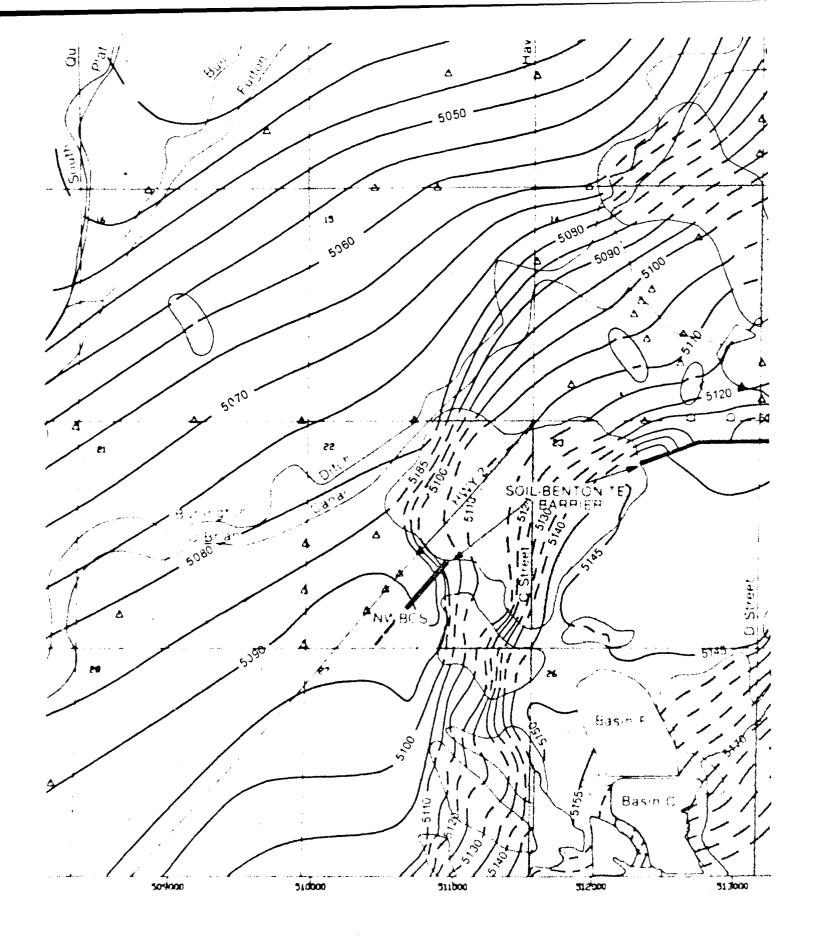
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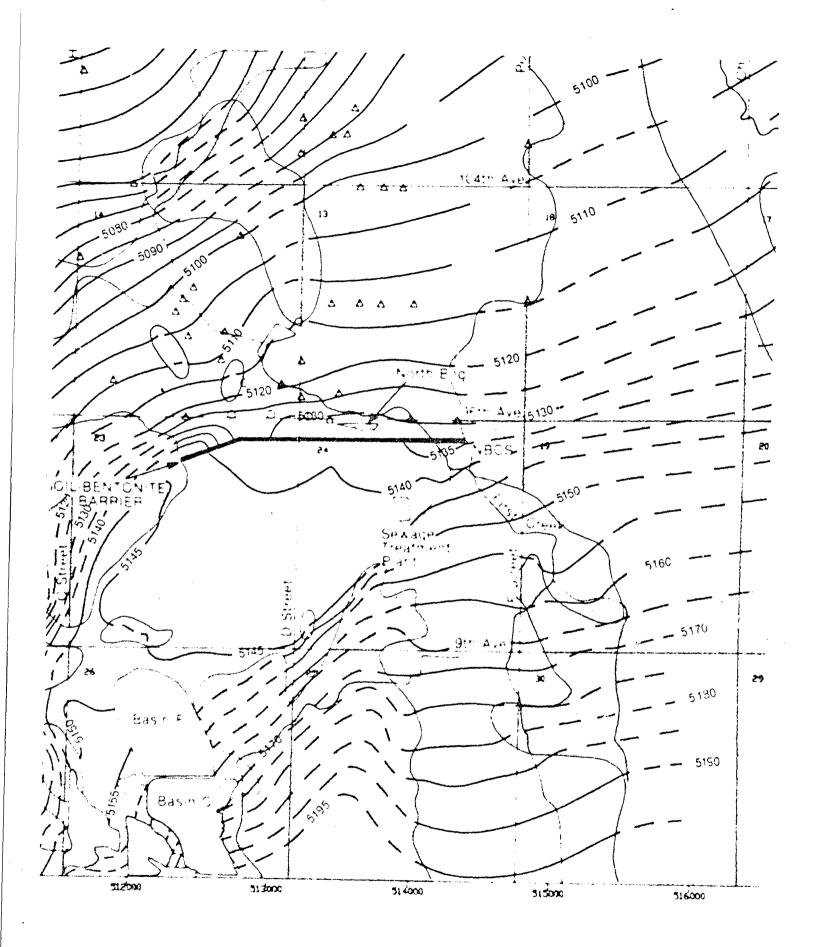


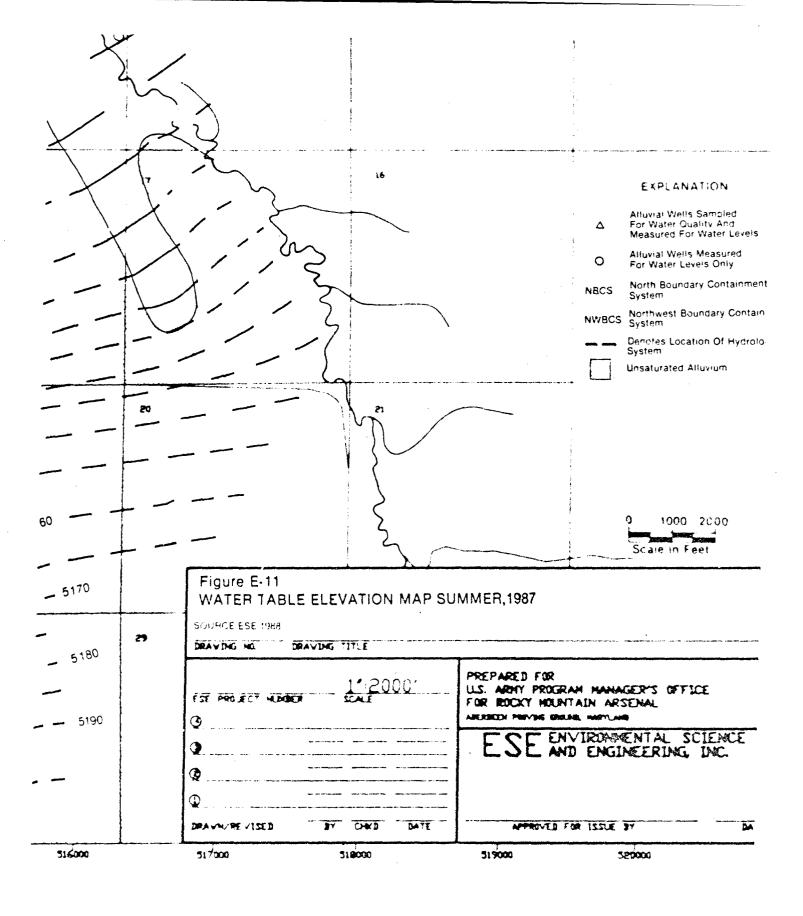
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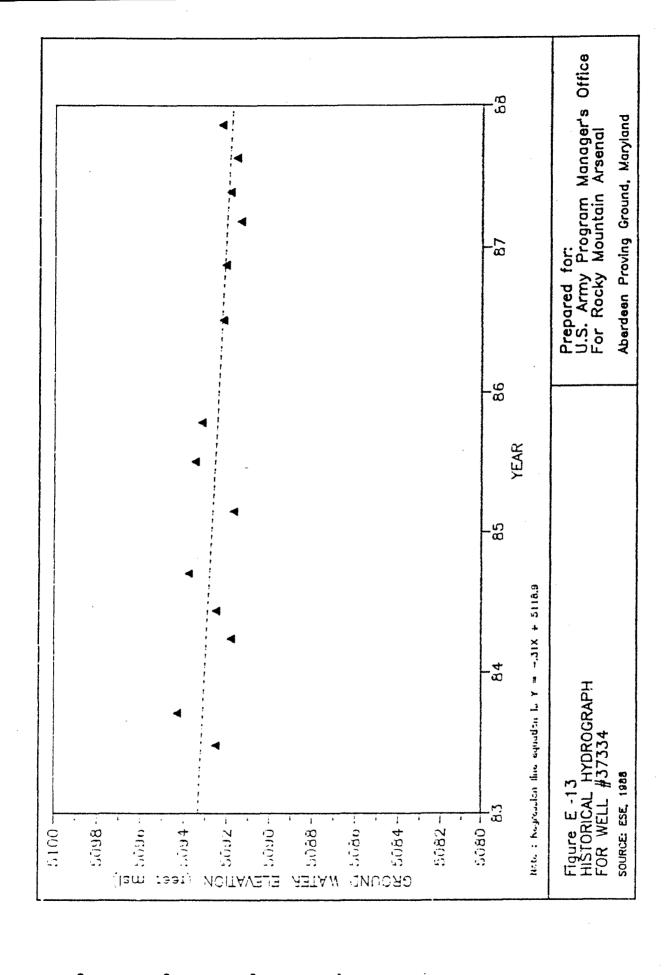
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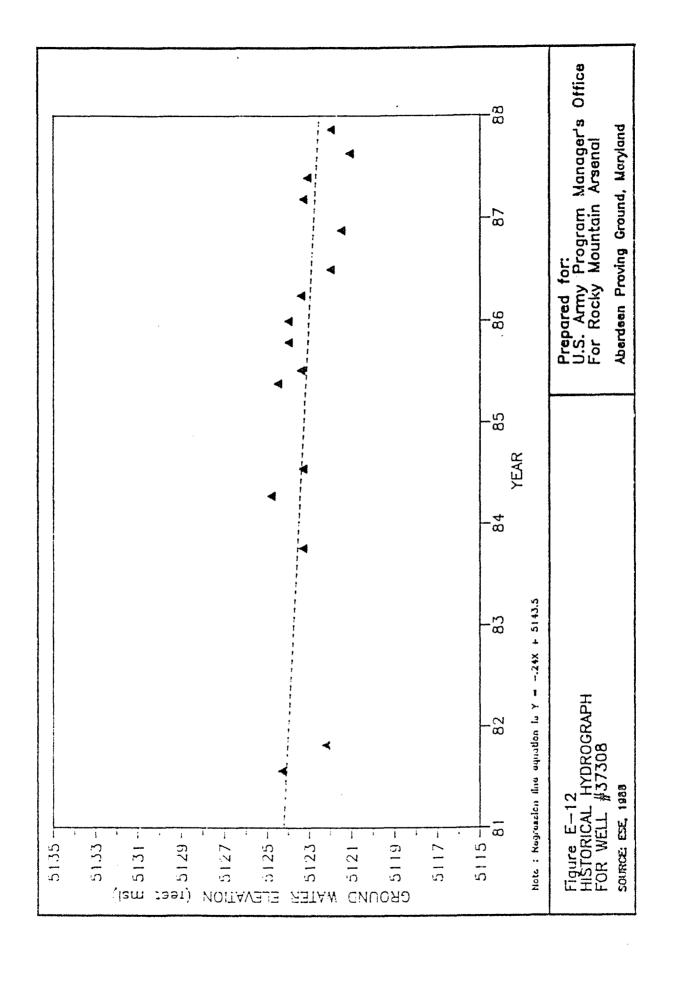






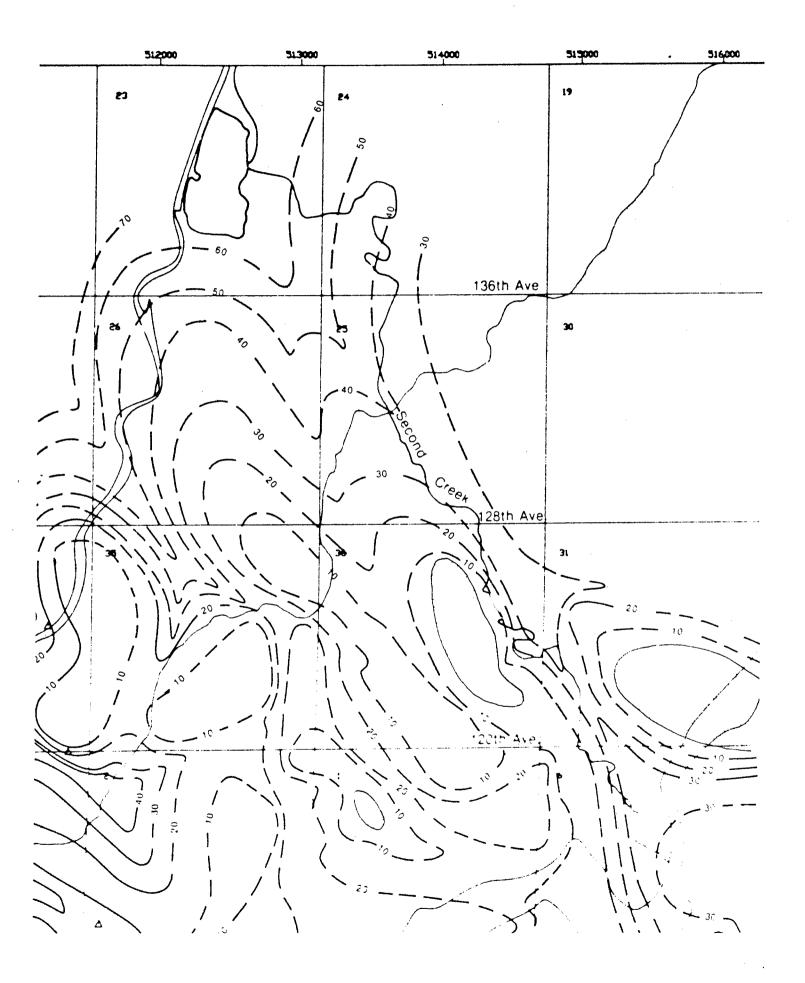


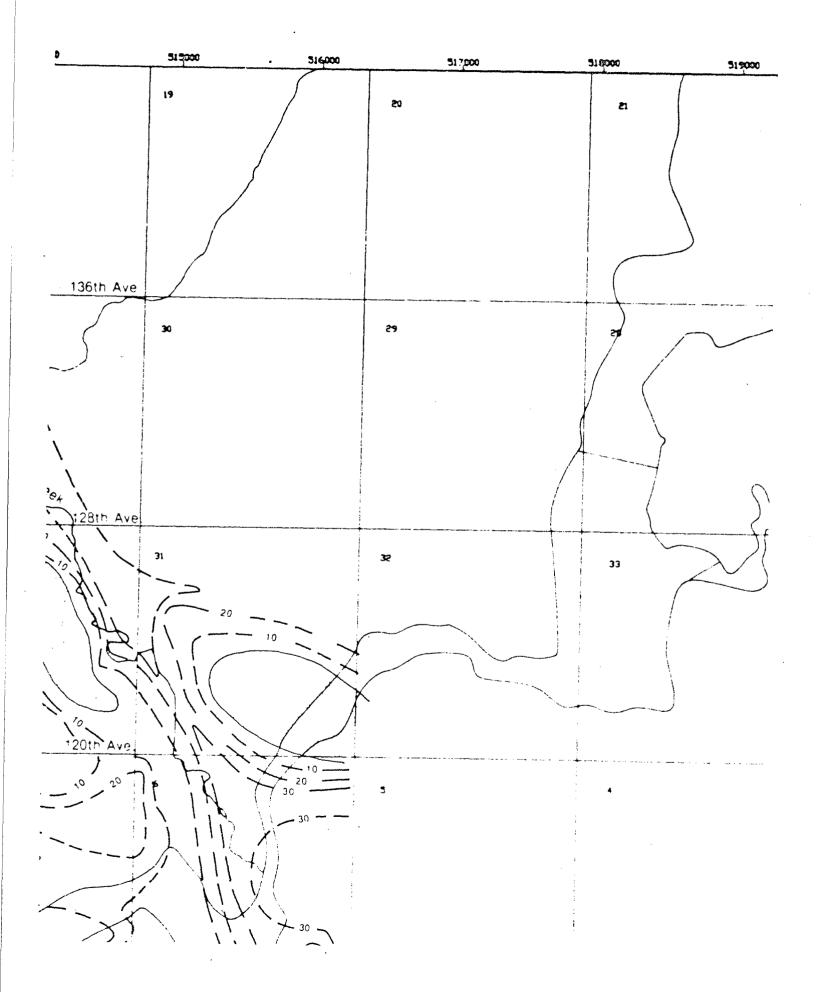


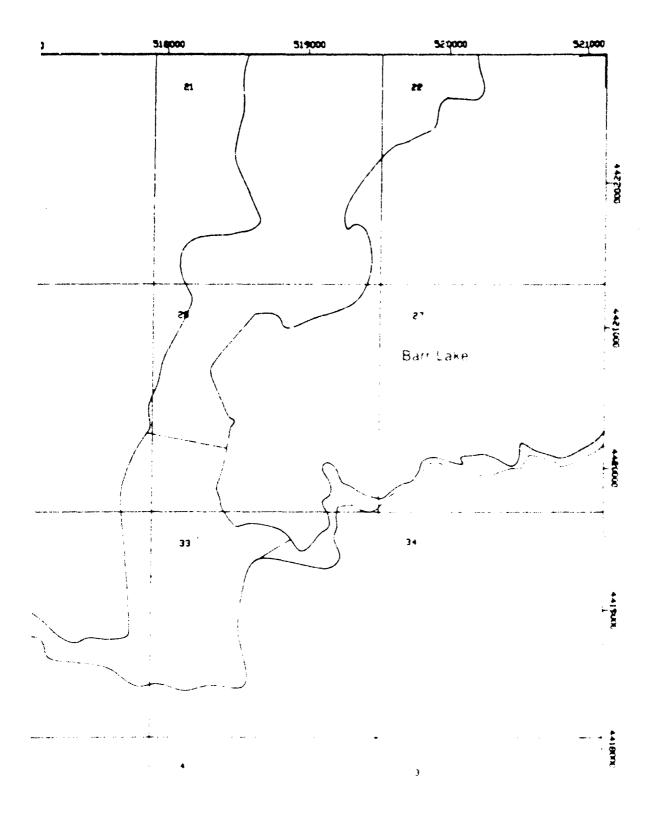


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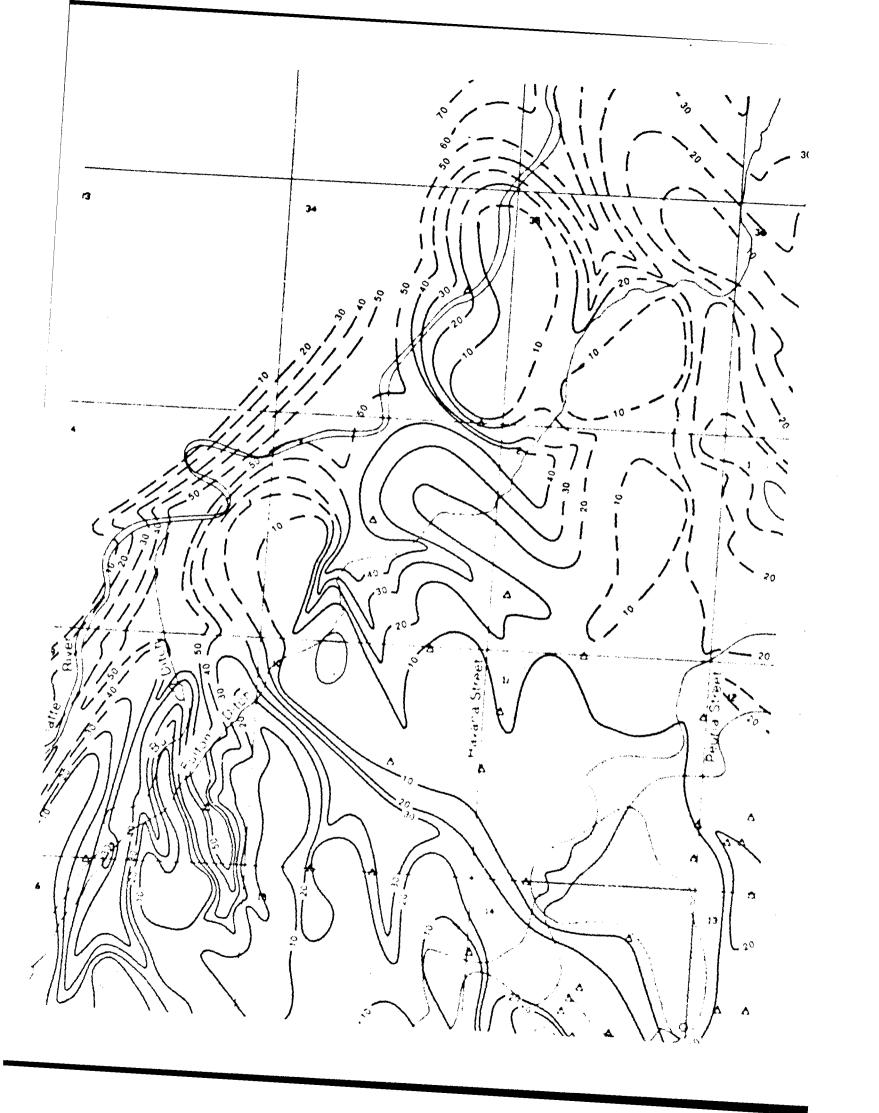
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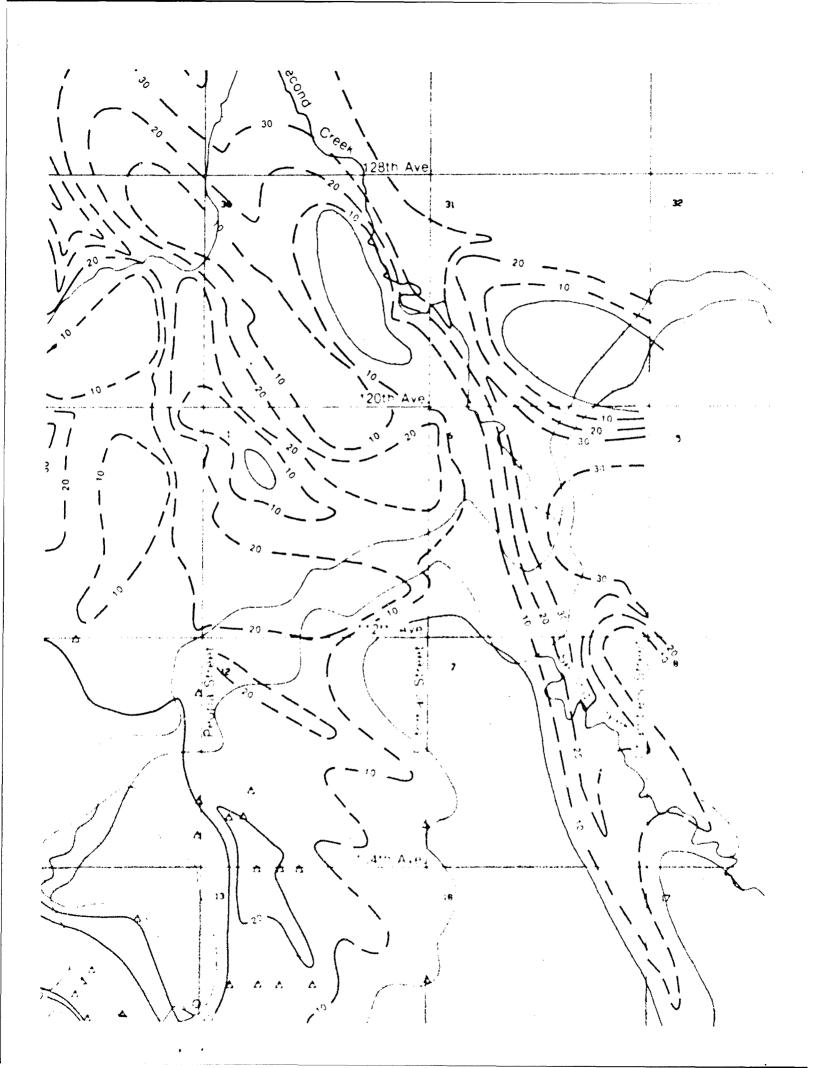


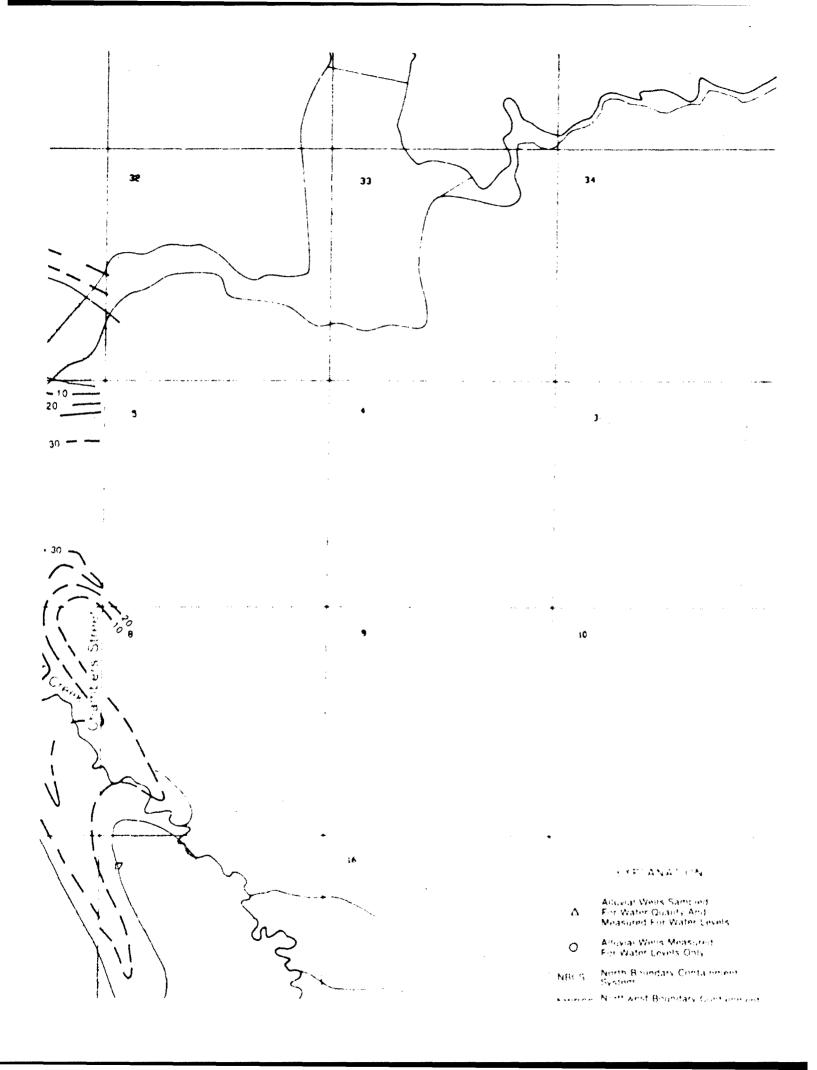


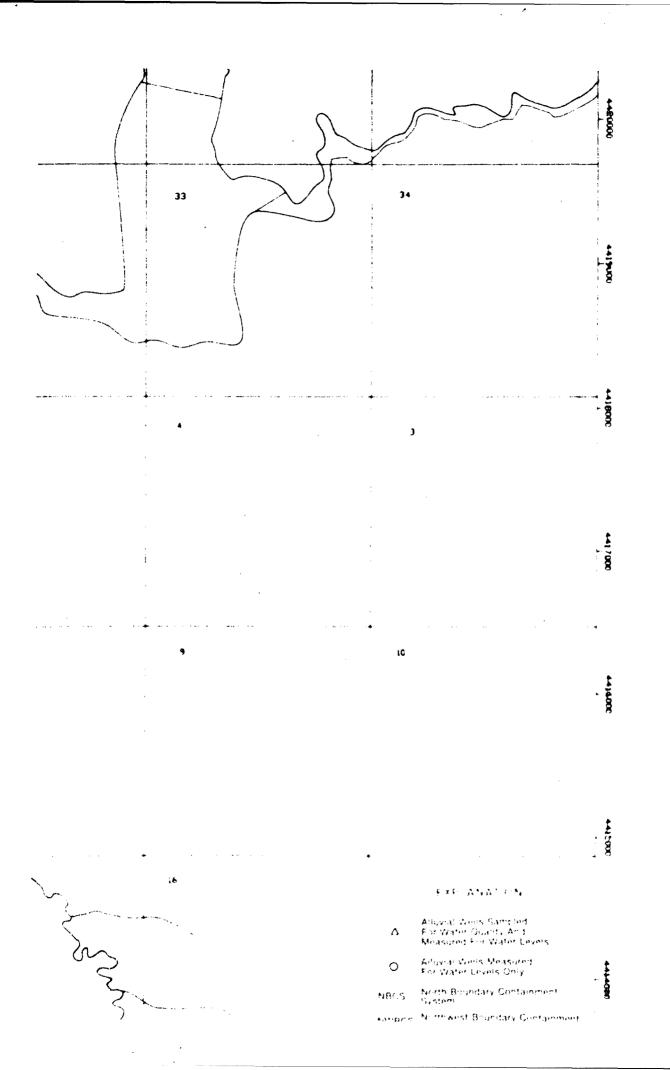


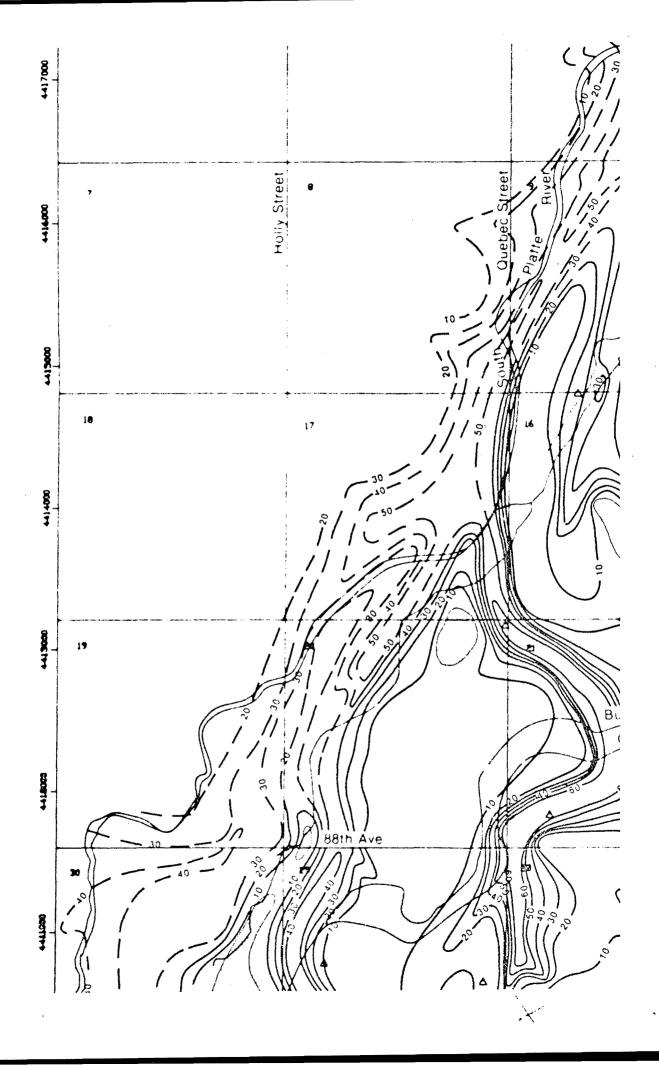
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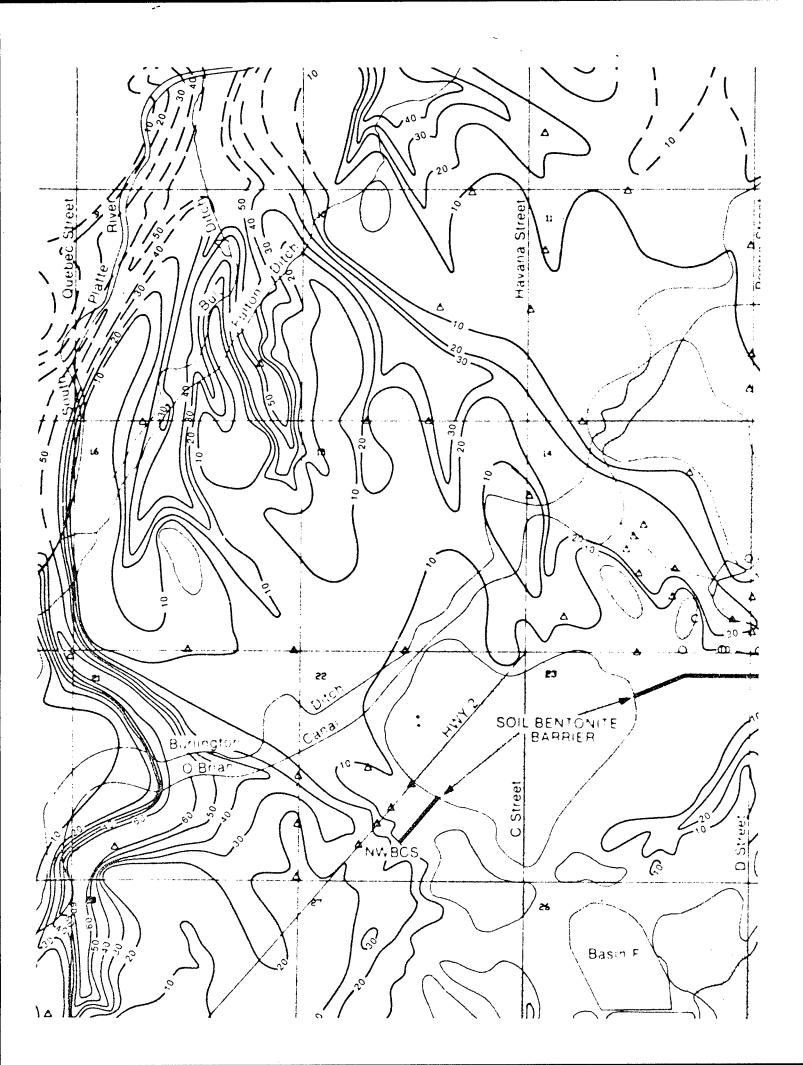


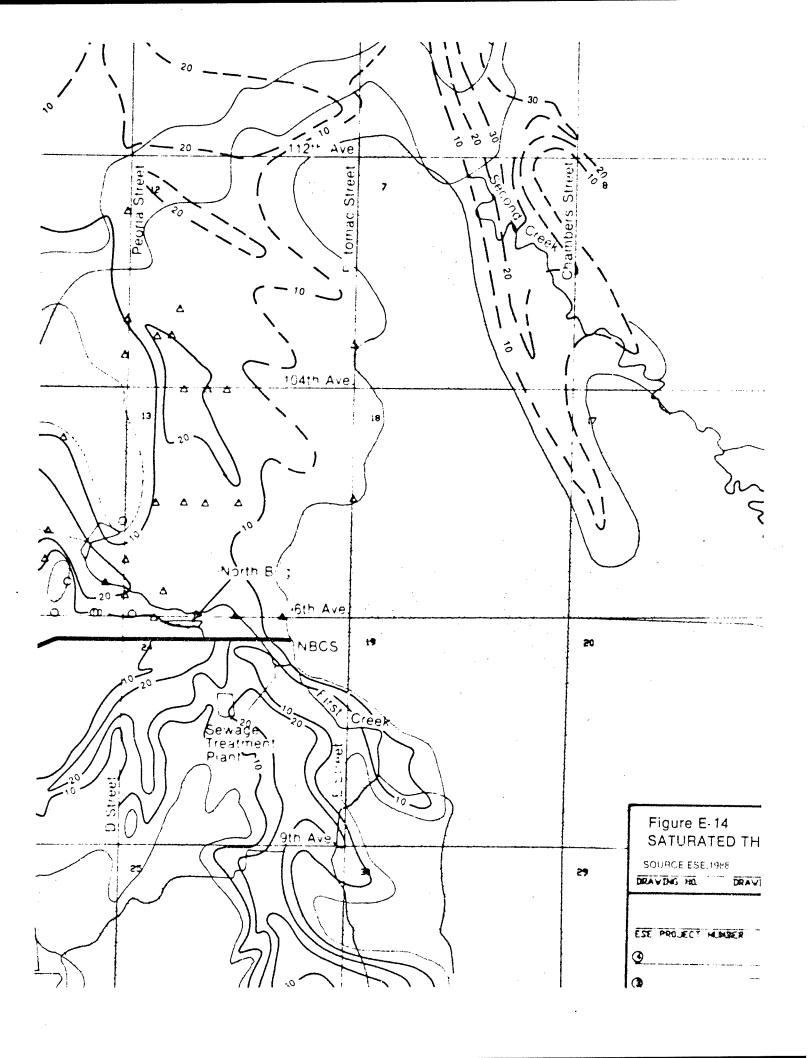


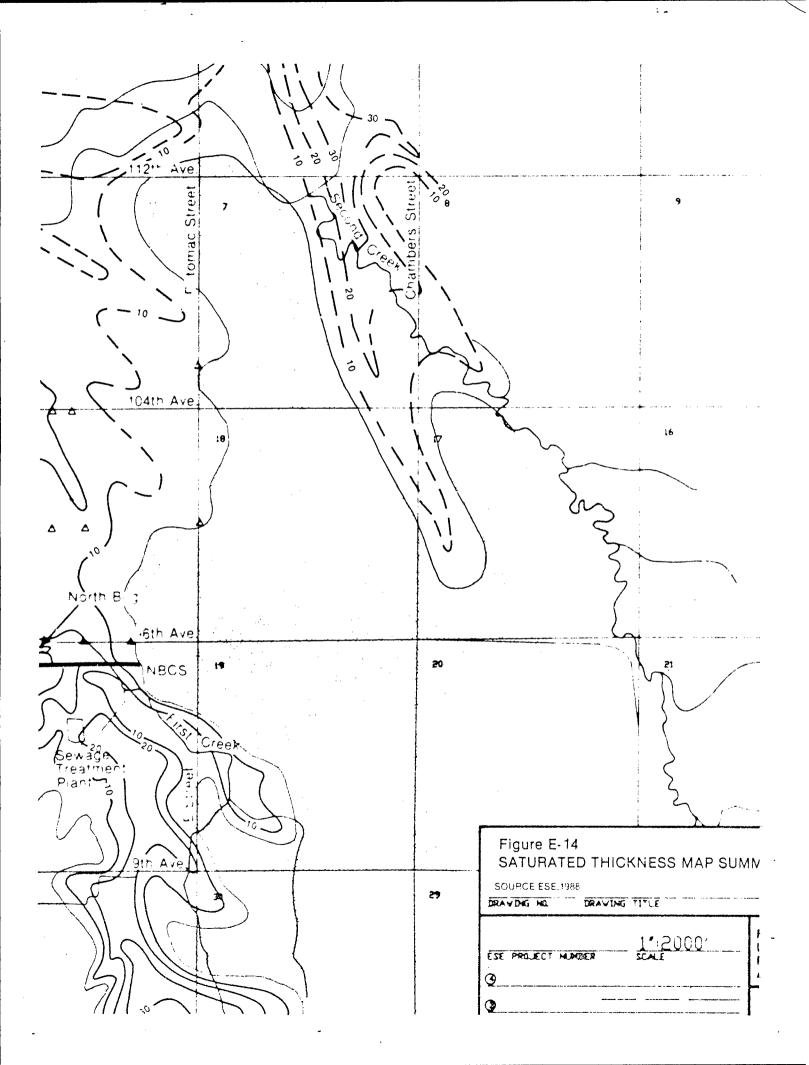


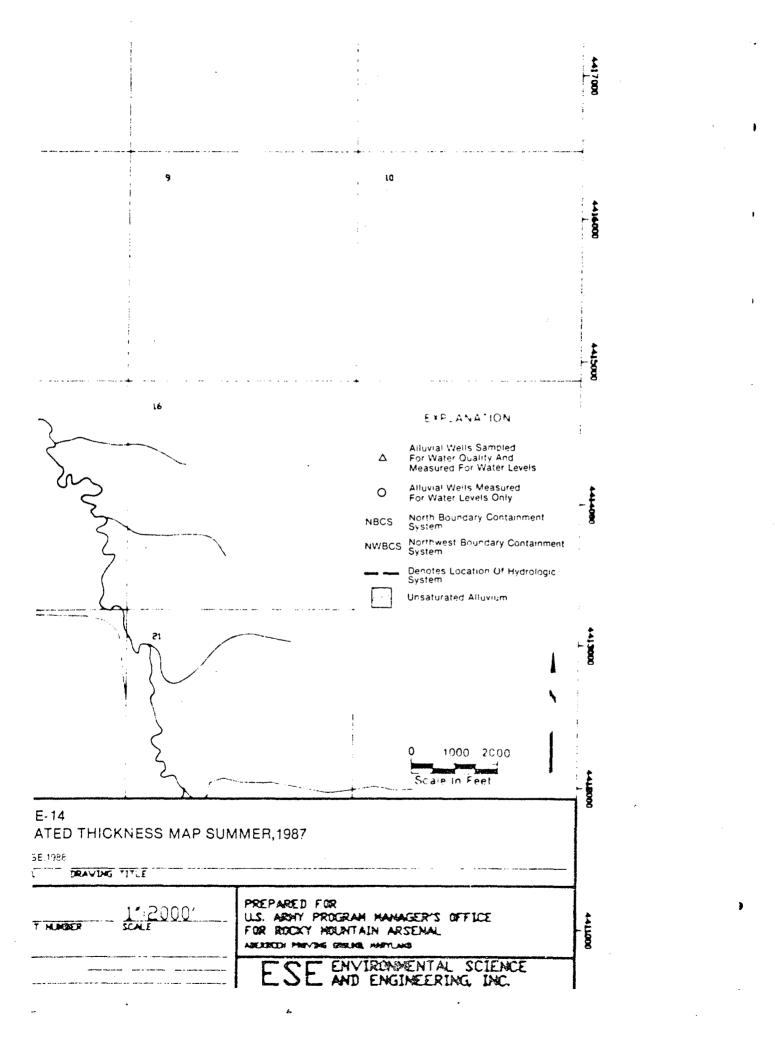


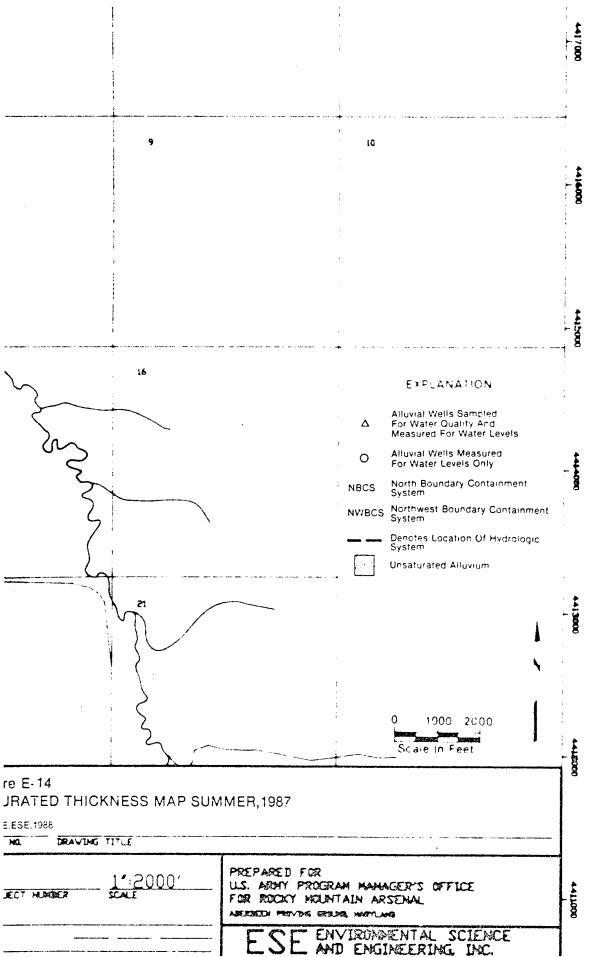






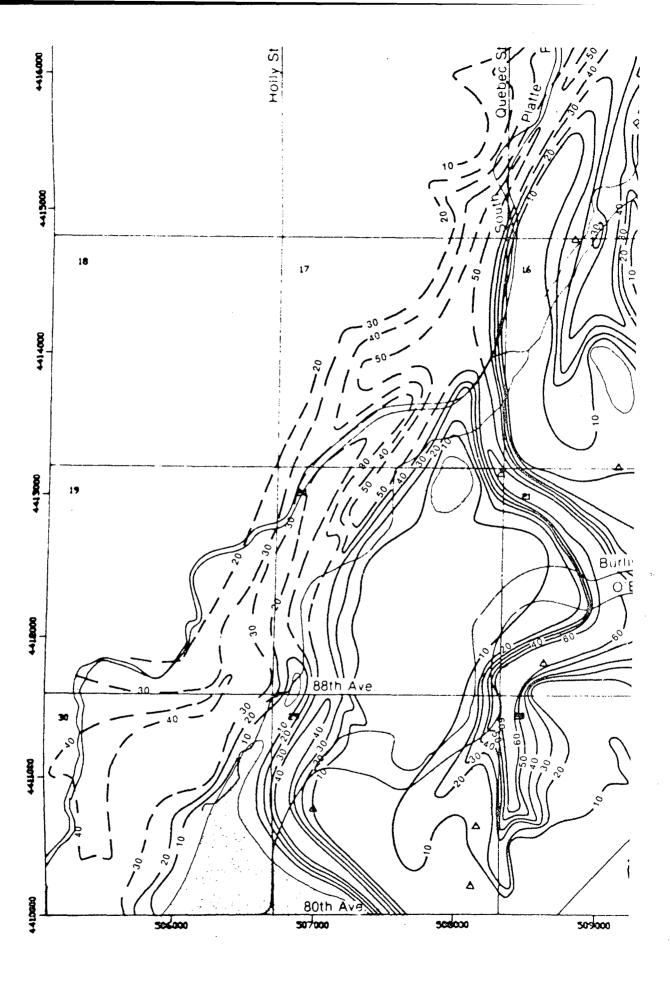






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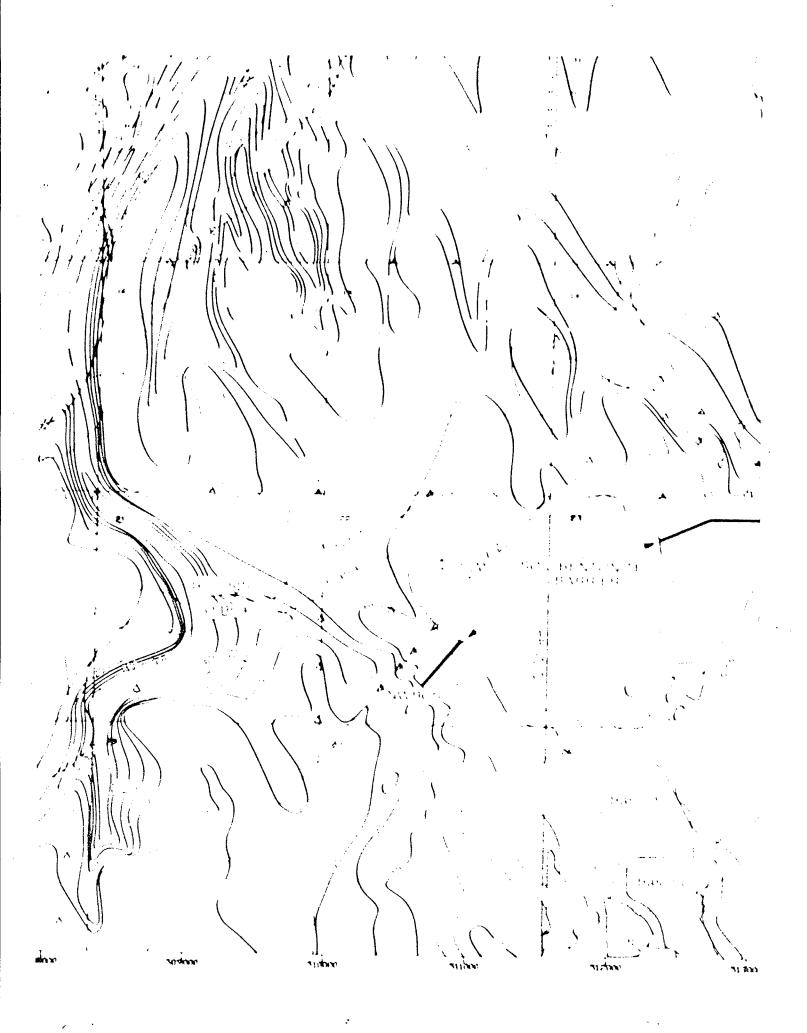
re E-14

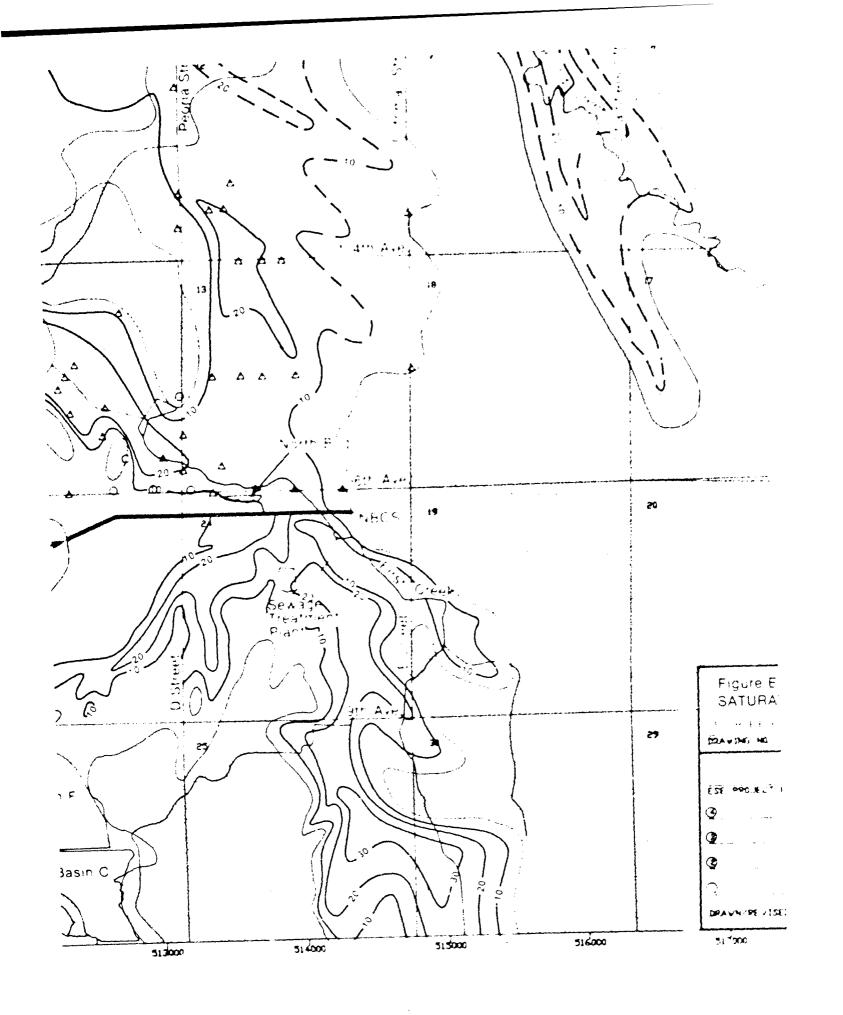


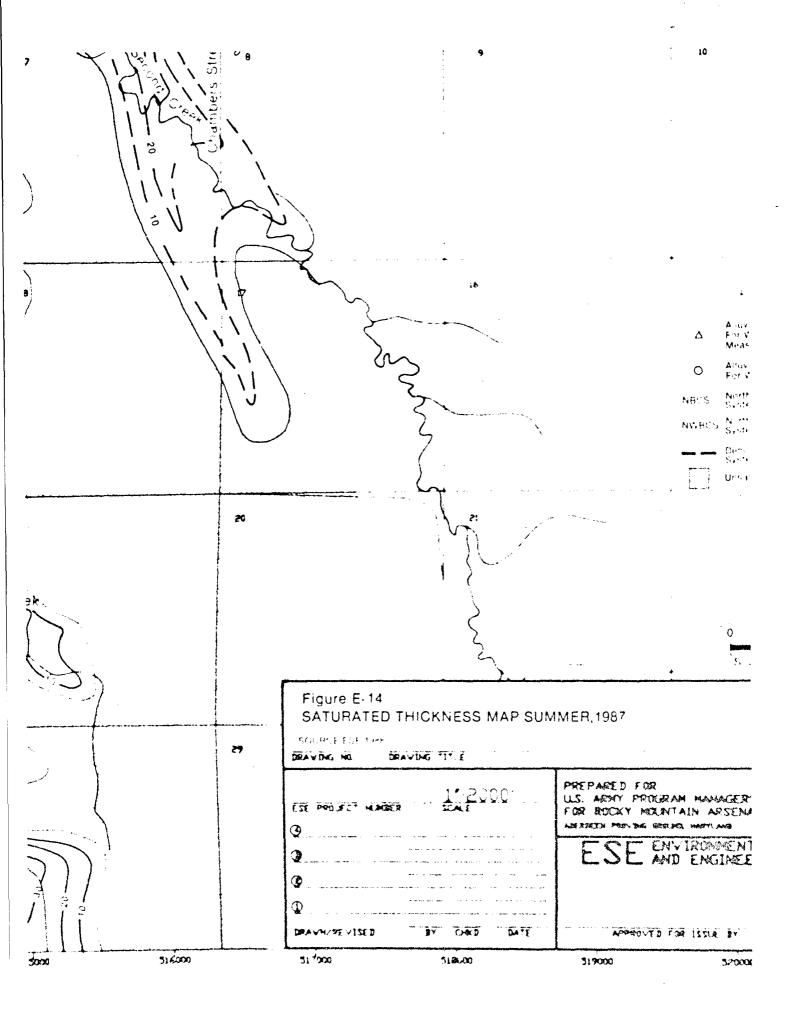
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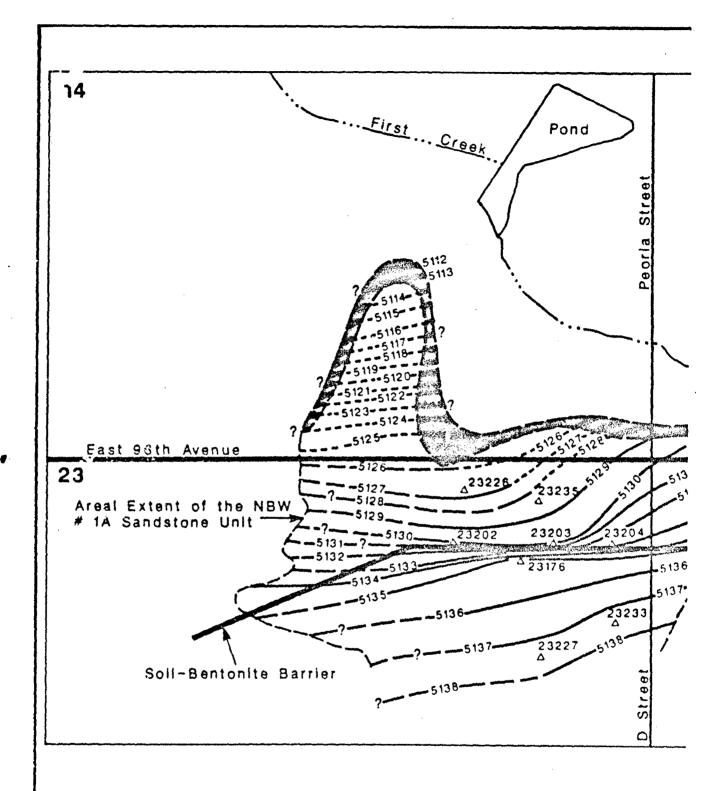
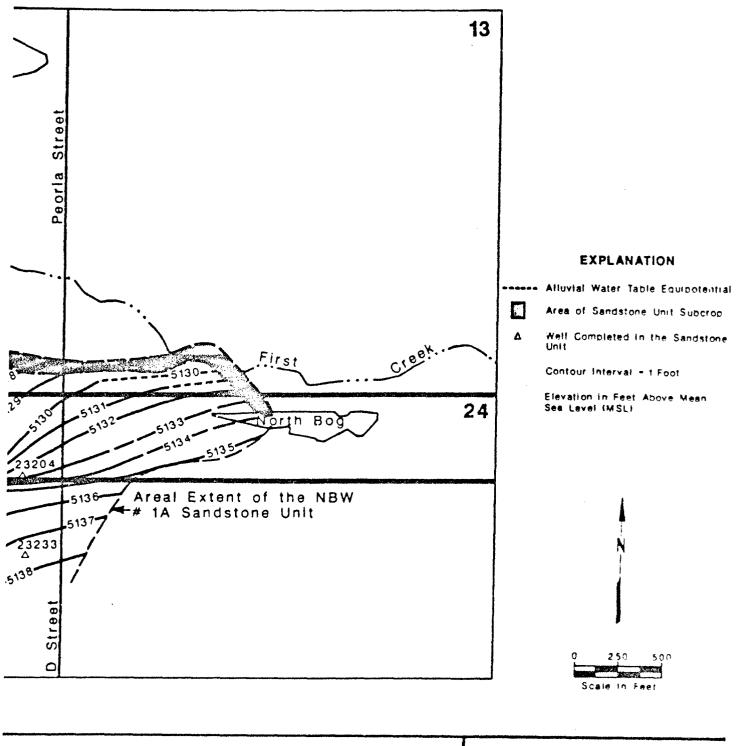
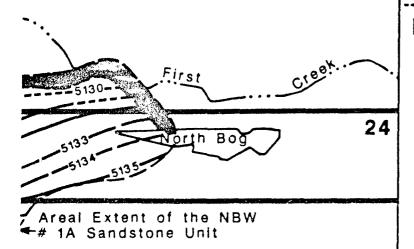


Figure E-15
POTENTIOMETRIC SURFACE MAP OF DENVER FM UNIT NBW#1A
FFBRUARY, 1988

SOURCE HLA 1984



Prepared for: U.S. Army Program Manager's ( For Rocky Mountain Arsenal



## **EXPLANATION**

Alluvial Water Table Equipotential Lines

Area of Sandstone Unit Subcrop

Well Completed in the Sandstone

Contour Interval - 1 Foot

Elevation in Feet Above Mean Sea Level (MSL)



Prepared for: U.S. Army Program Manager's Office For Rocky Mountain Arsenal

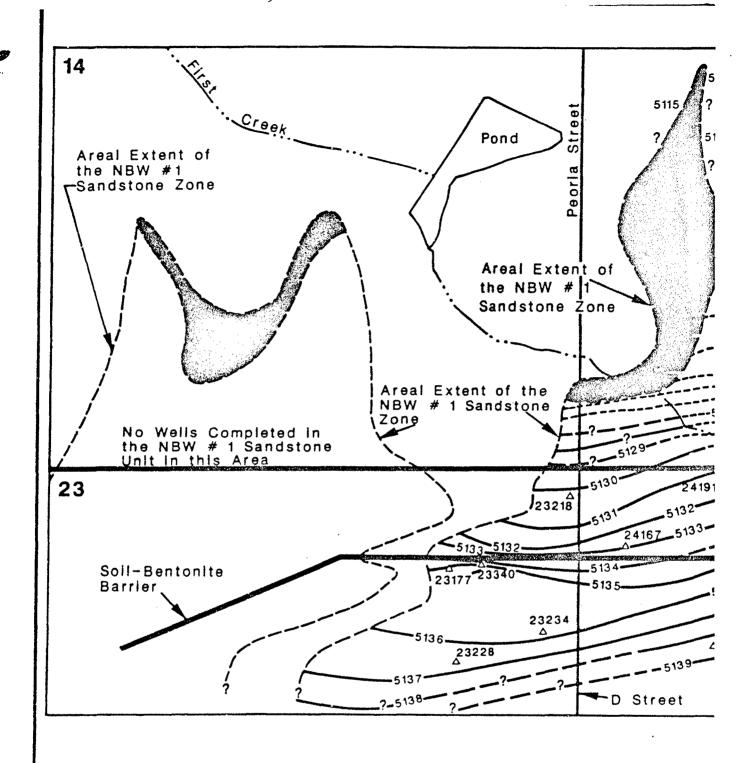
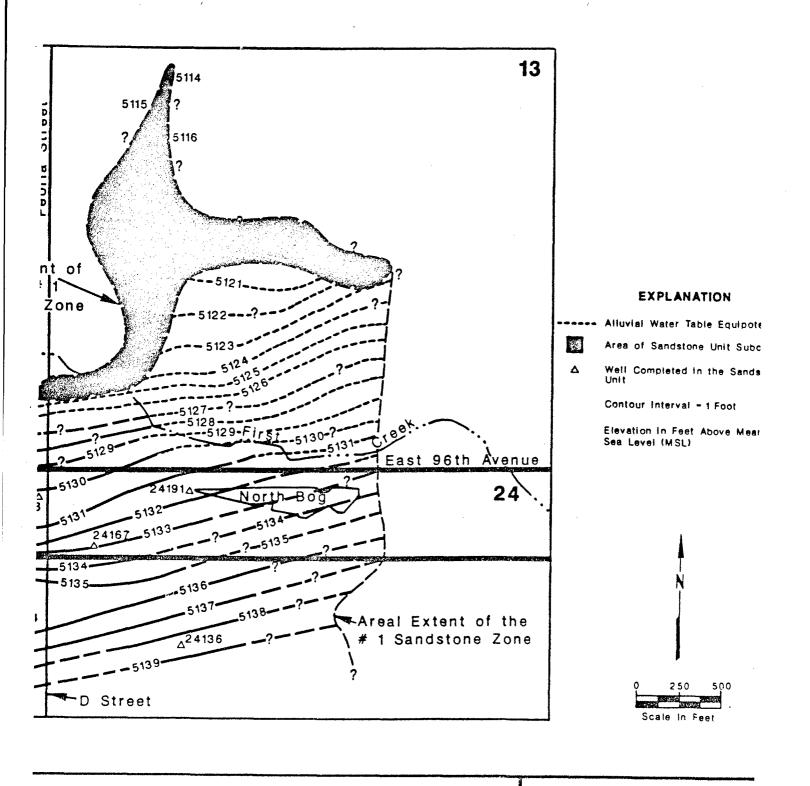
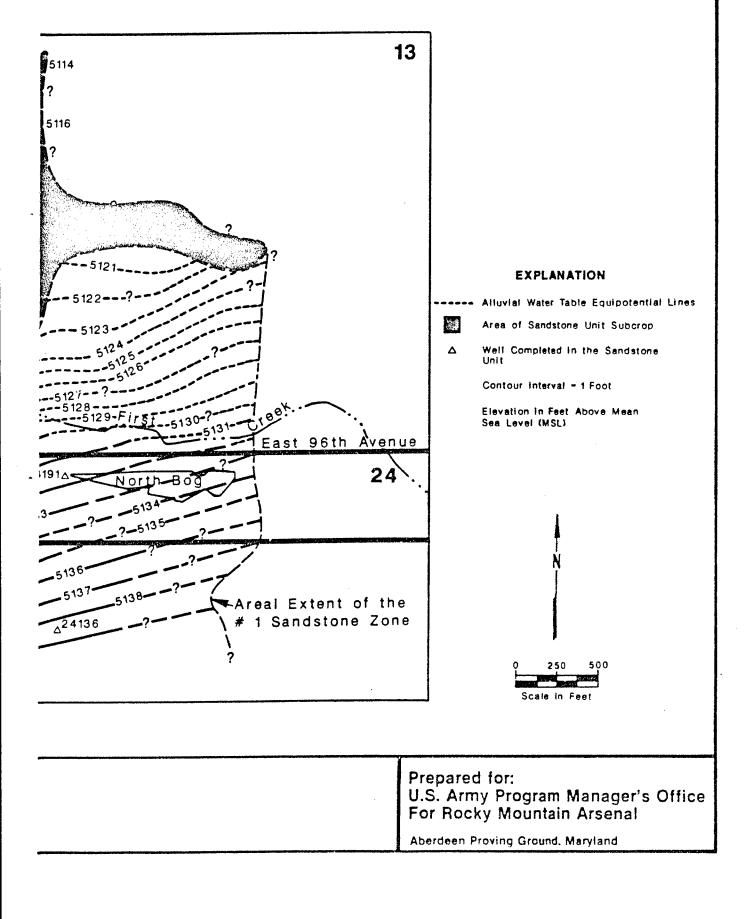


Figure E-16
POTENTIOMETRIC SURFACE MAP OF DENVER FM UNIT NBW#1
FEBRUARY, 1988

SOURCE, HLA, 1988



Prepared for: U.S. Army Program Manager For Rocky Mountain Arsena



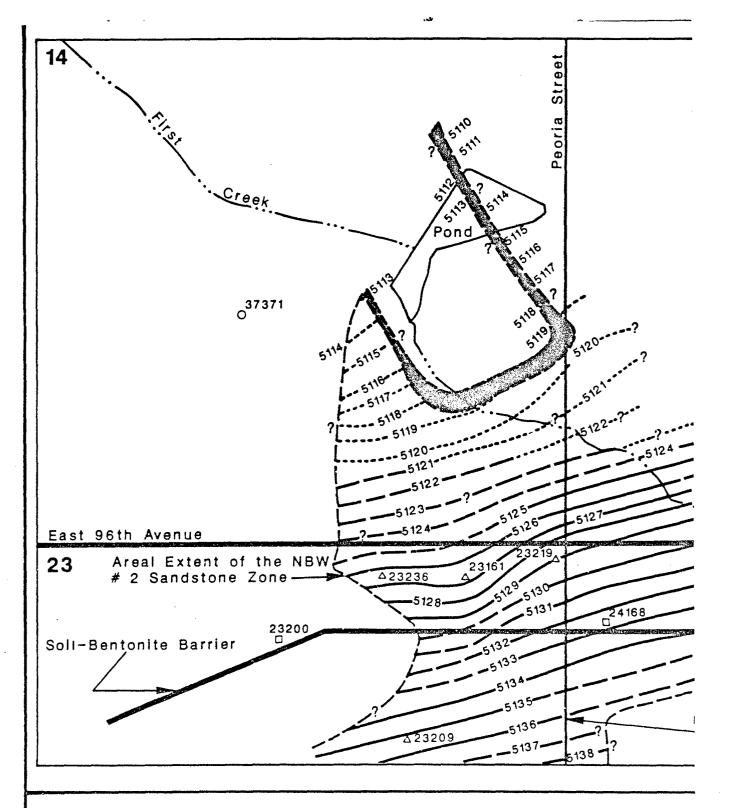
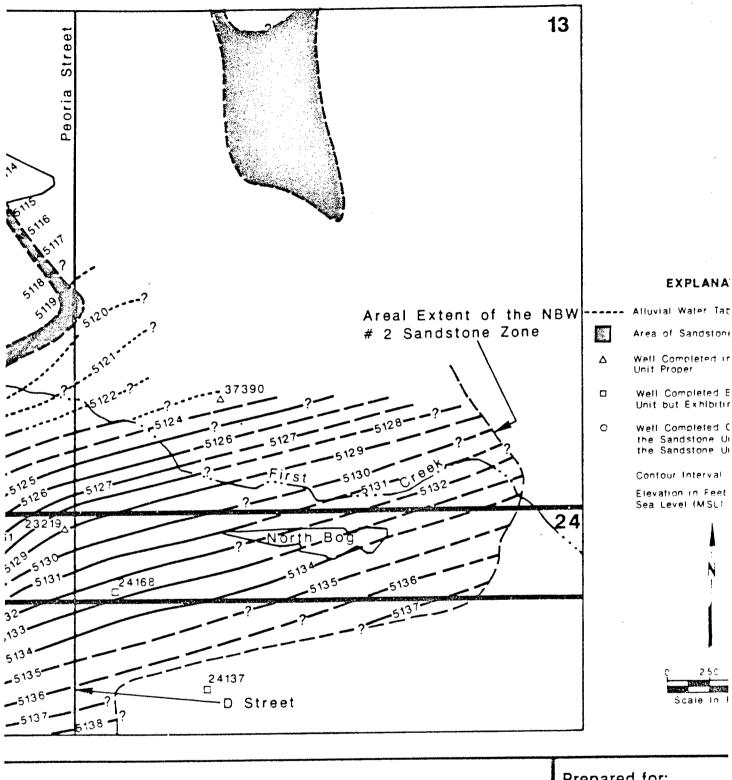


Figure E-17
POTENTIOMETRIC SURFACE MAP OF DENVER FM UNIT NBW#2
FEBRUARY, 1988

SOURCE: HLA, 1988



Prepared for: U.S. Army Program I For Rocky Mountain

Aberdeen Proving Ground, N

## **EXPLANATION**

Areal Extent of the NBW # 2 Sandstone Zone

37390

?
5126

5127

5129

?
First

5130

24

?
North Bog

5134

5135

5136

24137

D Street

---- Alluvial Water Table Equipotential Lines

Area of Sandstone Unit Subcrop

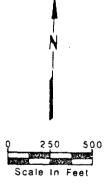
Well Completed in the Sandstone Unit Proper

Well Completed Below the Sandstone
Unit but Exhibiting Hydrologic Connection

O Well Completed Outside the Areal Extent of the Sandstone Unit but Correlated to the Sandstone Unit

Contour Interval - 1 Foot

Elevation in Feet Above Mean Sea Level (MSL)



Prepared for:

U.S. Army Program Manager's Office For Rocky Mountain Arsenal

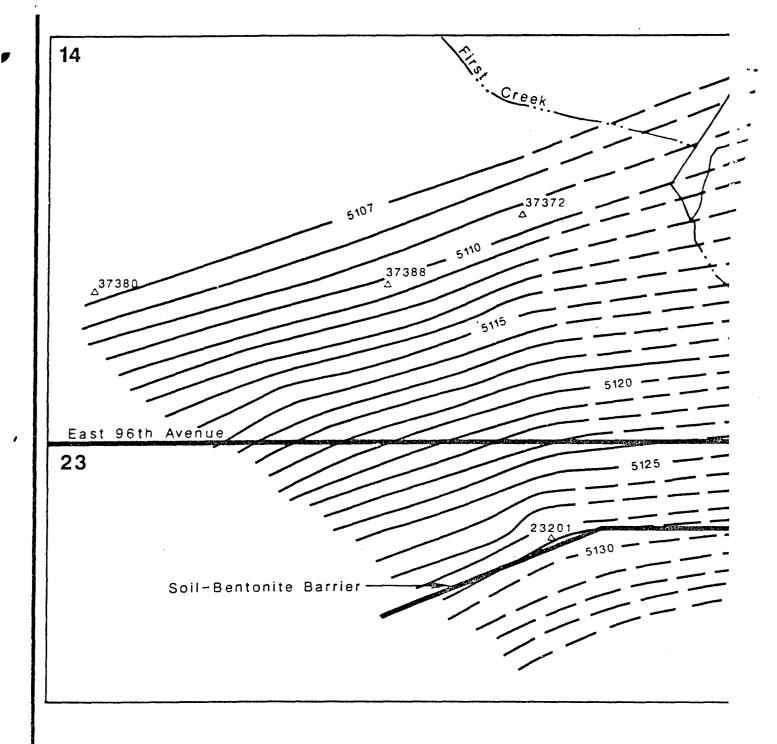
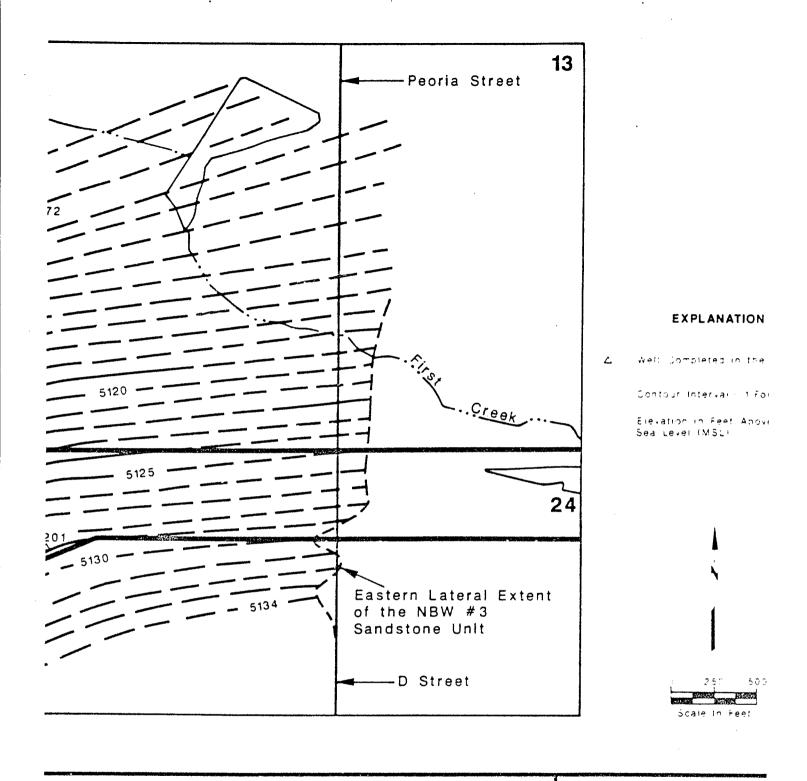
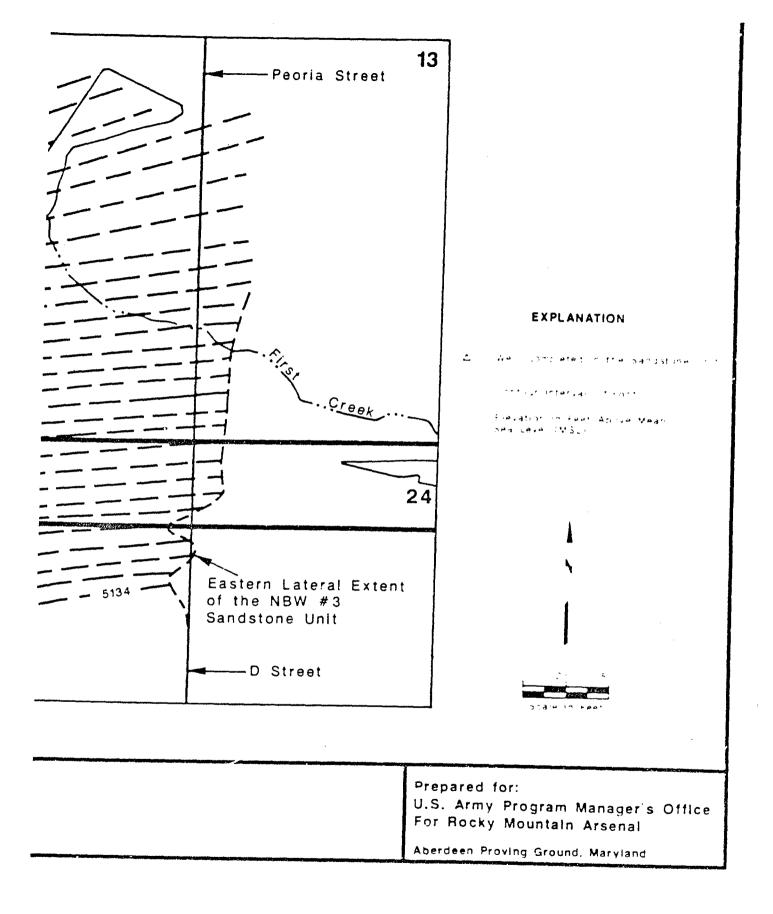


Figure E-18
POTENTIOMETRIC SURFACE MAP OF DENVER FM UNIT NBW#3
FEBRUARY, 1988



Prepared for: U.S. Army Program Mana/ For Rocky Mountain Arse



APPENDIX F CONTAMINANT DISTRIBUTION MAPS, CONTAMINANT POINT PLOTS, AND WATER QUALITY DATA

F.1 CONTAMINANT DISTRIBUTION AND POINT PLOT MAPS

ALLUVIAL AQUIFER

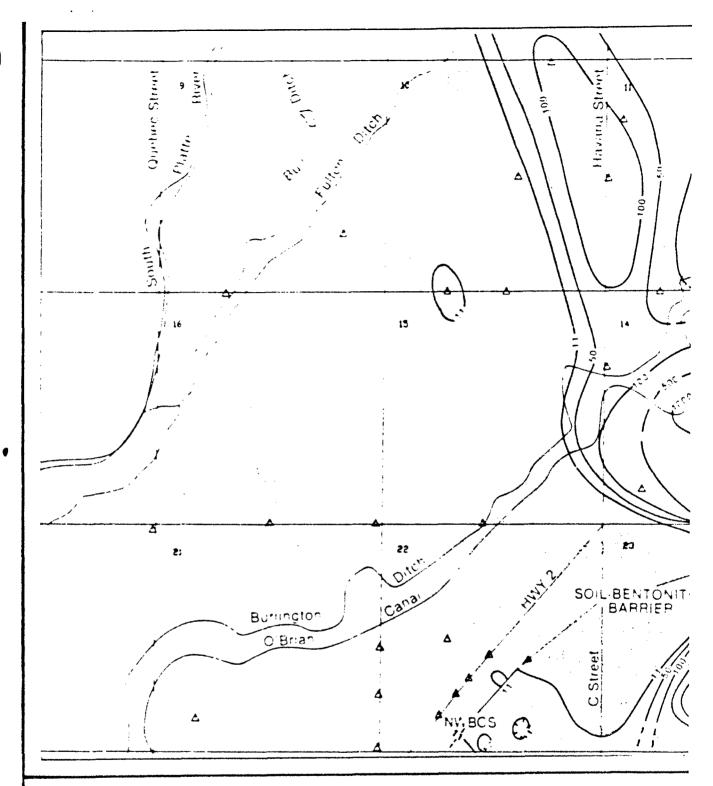
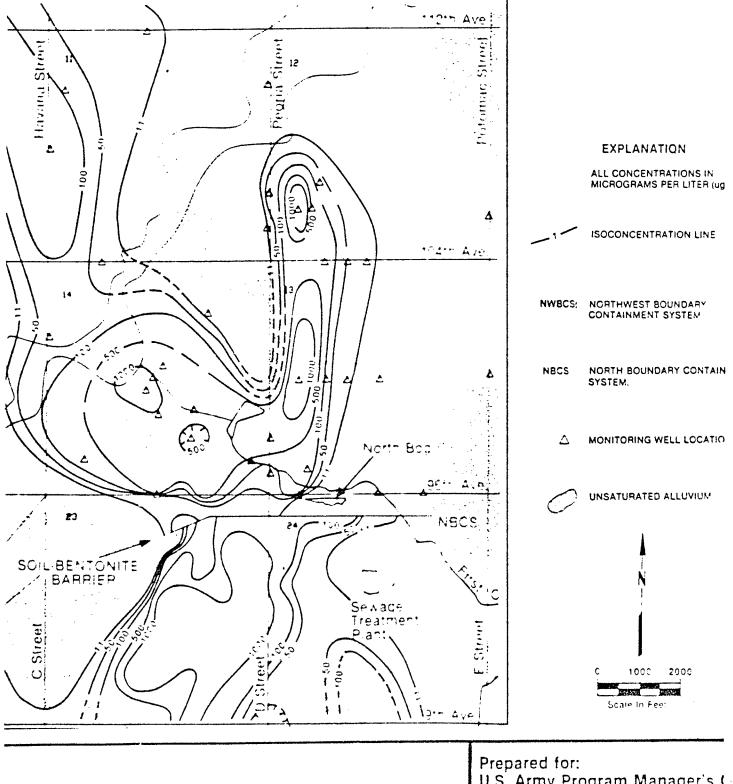
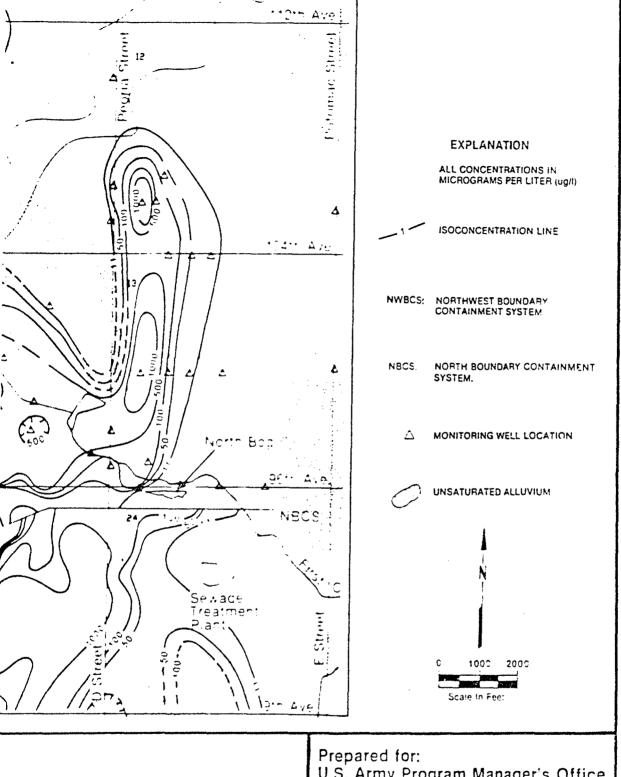


Figure F-1
DIMP CONCENTRATION DISTRIBUTION, ug/I, 3RD QUARTER, FY87, ALLUVIAL AQUIFER

NOURCE ESF 198



Prepared for: U.S. Army Program Manager's ( For Rocky Mountain Arsenal



Prepared for: U.S. Army Program Manager's Office For Rocky Mountain Arsenal

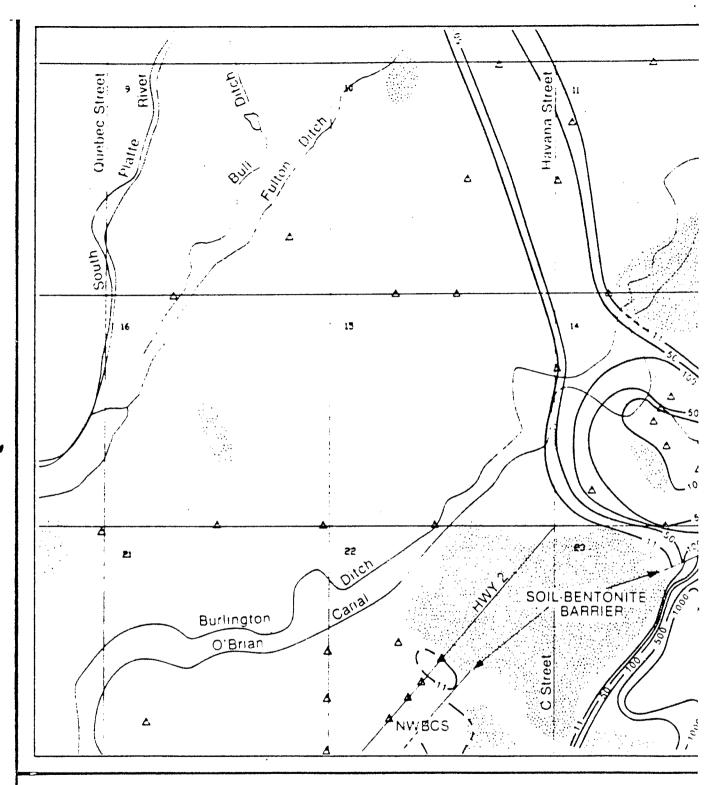
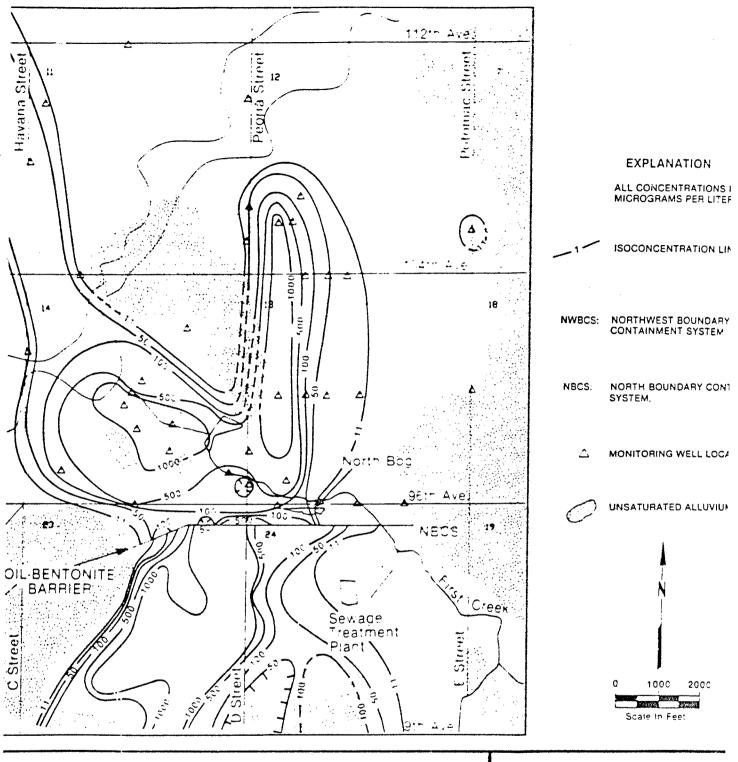
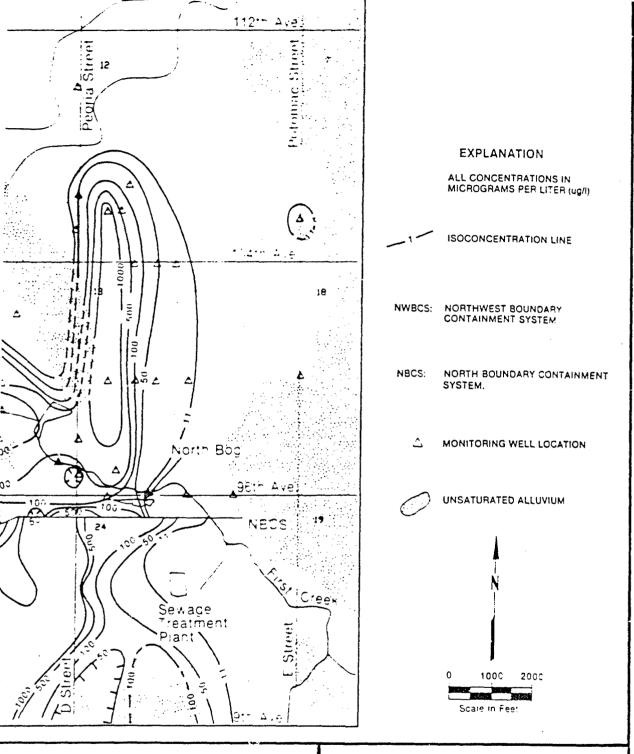


Figure F-2
DIMP CONCENTRATION DISTRIBUTION, ug/I, 4TH QUARTER, FY87, ALLUVIAL AQUIFER

SOURCE.ESE 1988



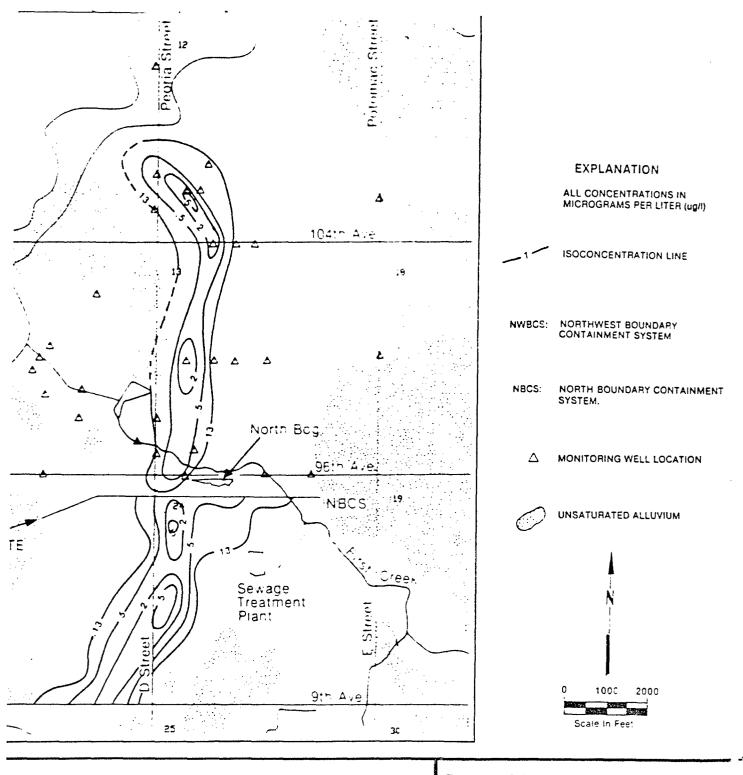
Prepared for: U.S. Army Program Manager' For Rocky Mountain Arsenal



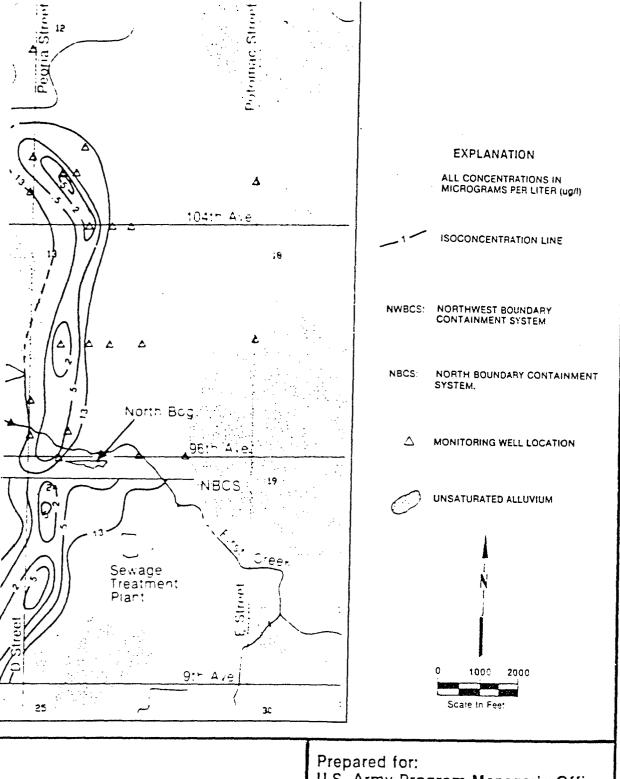
Prepared for: U.S. Army Program Manager's Office For Rocky Mountain Arsenal

Figure F-3
DBCP CONCENTRATION DISTRIBUTION, ug/I, 3RD QUARTER,
FY87, ALLUVIAL AQUIFER

SOURCE.ESE 1986



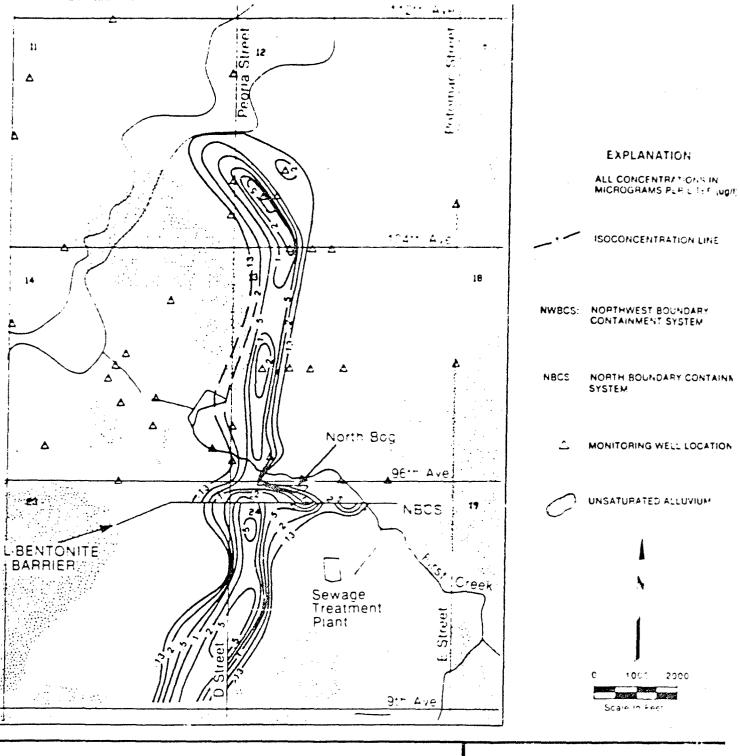
Prepared for: U.S. Army Program Manager's Office For Rocky Mountain Arsenal



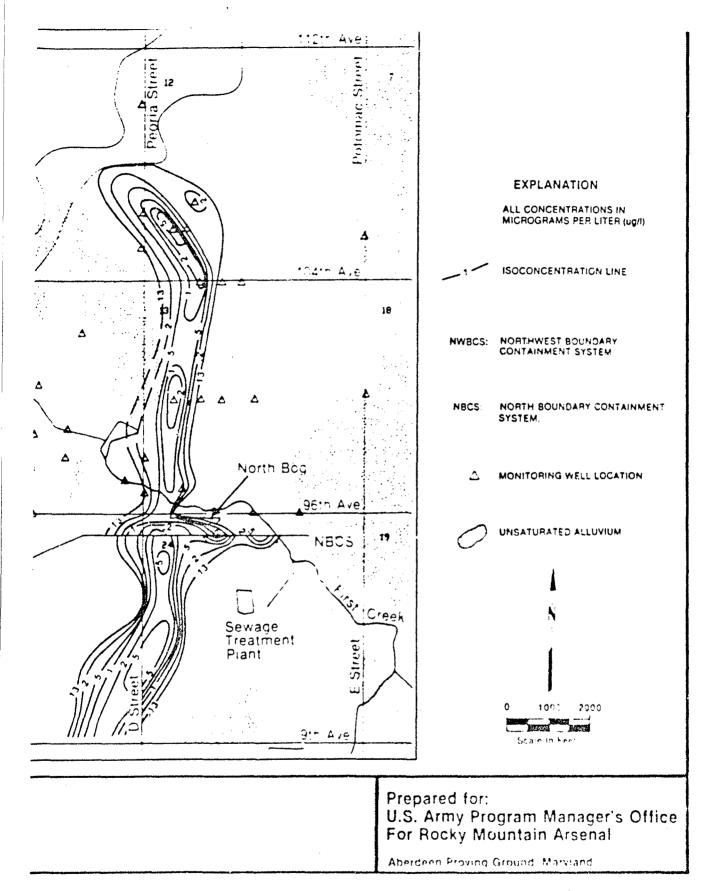
Prepared for: U.S. Army Program Manager's Office For Rocky Mountain Arsenal

Figure F-4
DBCP CONCENTRATION DISTRIBUTION, ug/I, 4TH QUARTER,
FY87, ALLUVIAL AQUIFER

SOURCE:ESE,1988



Prepared for: U.S. Army Program Manager's C For Rocky Mountain Arsenal



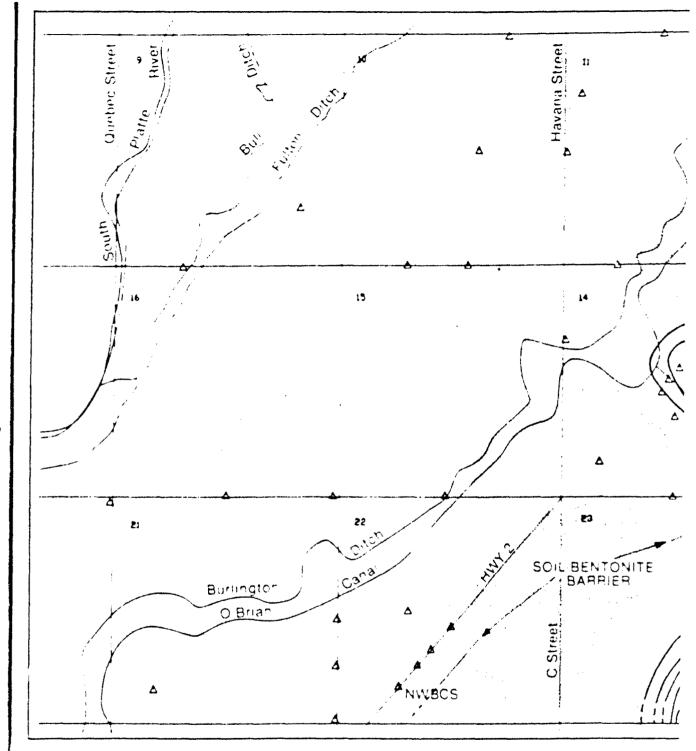
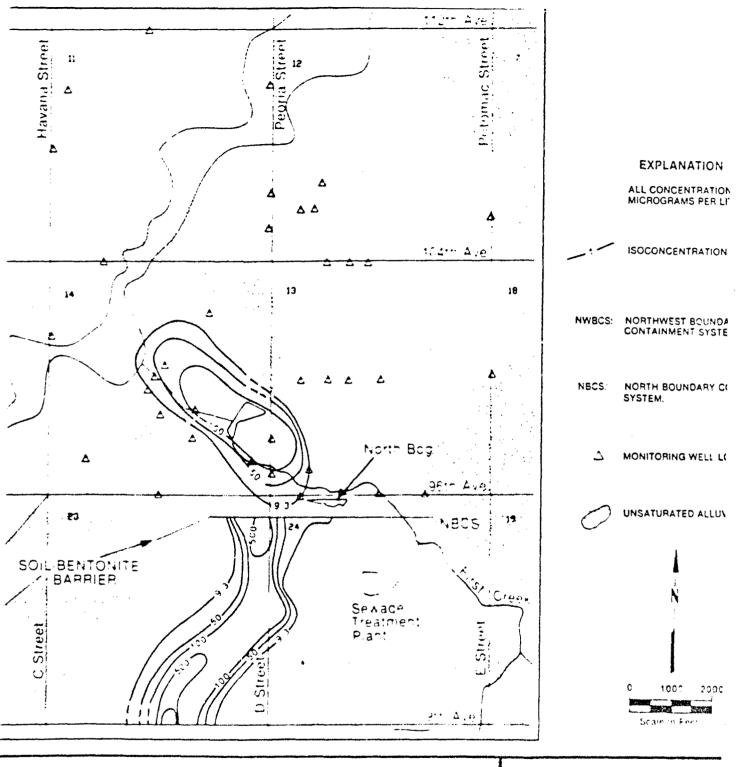
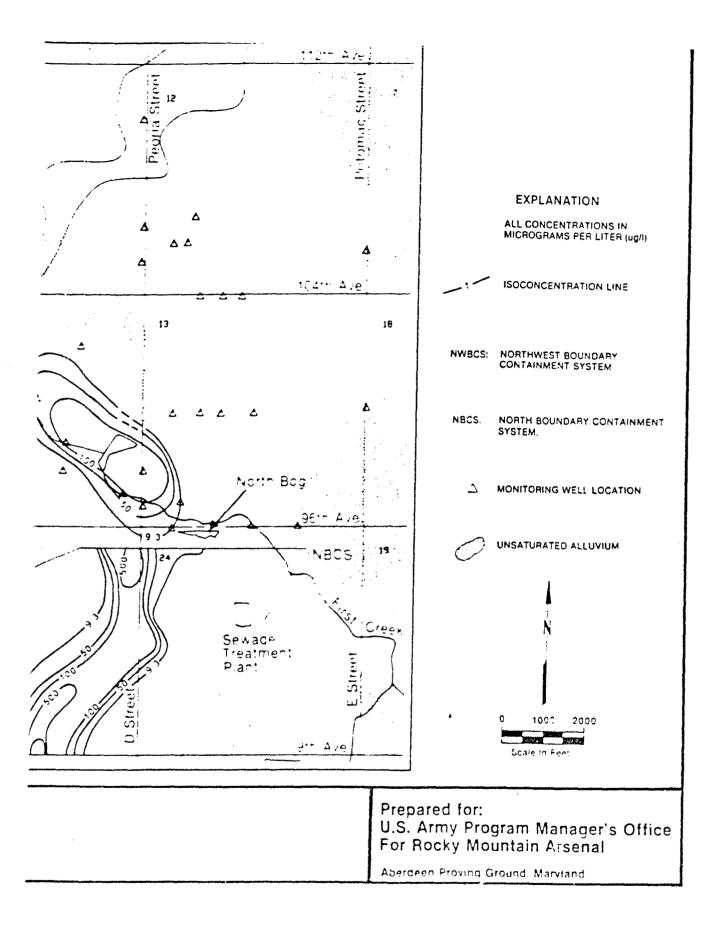


Figure F-5
DCPD CONCENTRATION DISTRIBUTION, ug/l, 3RD QUARTER,
FY87, ALLUVIAL AQUIFER

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Prepared for: U.S. Army Program Manage For Rocky Mountain Arsen



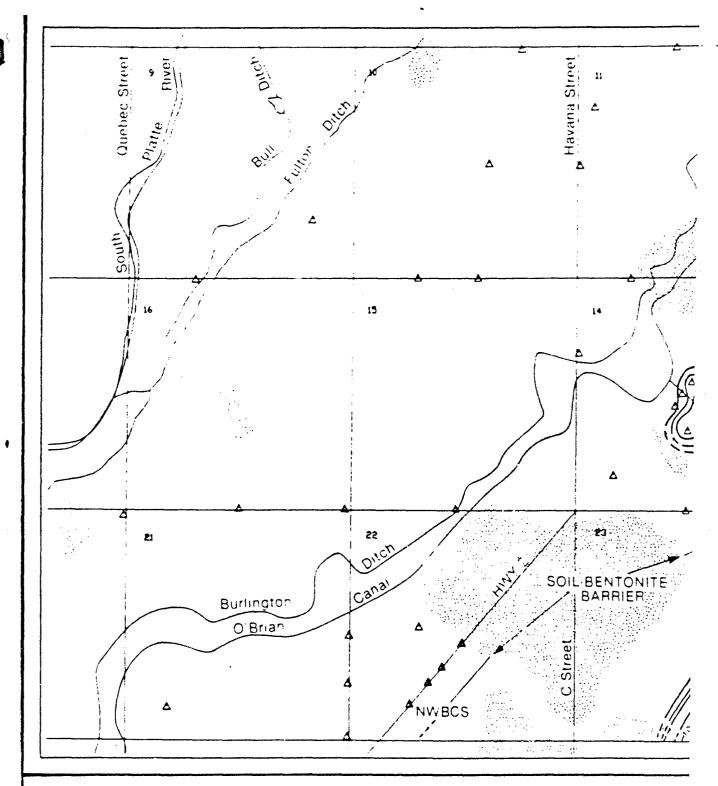
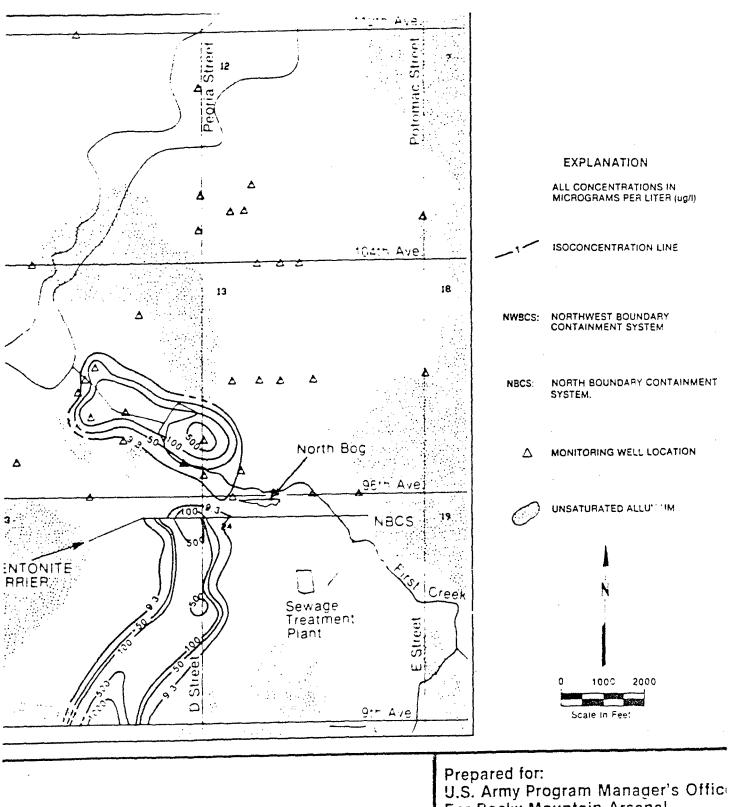
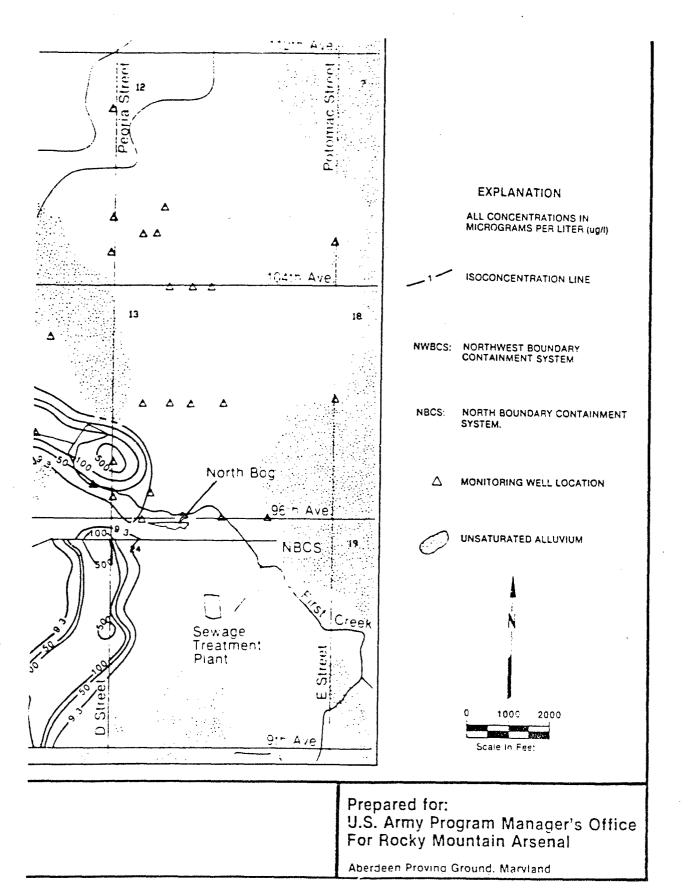


Figure F-6
DCDP CONCENTRATION DISTRIBUTION, ug/l, 4TH QUARTER, FY87, ALLUVIAL AQUIFER

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U.S. Army Program Manager's Office For Rocky Mountain Arsenal



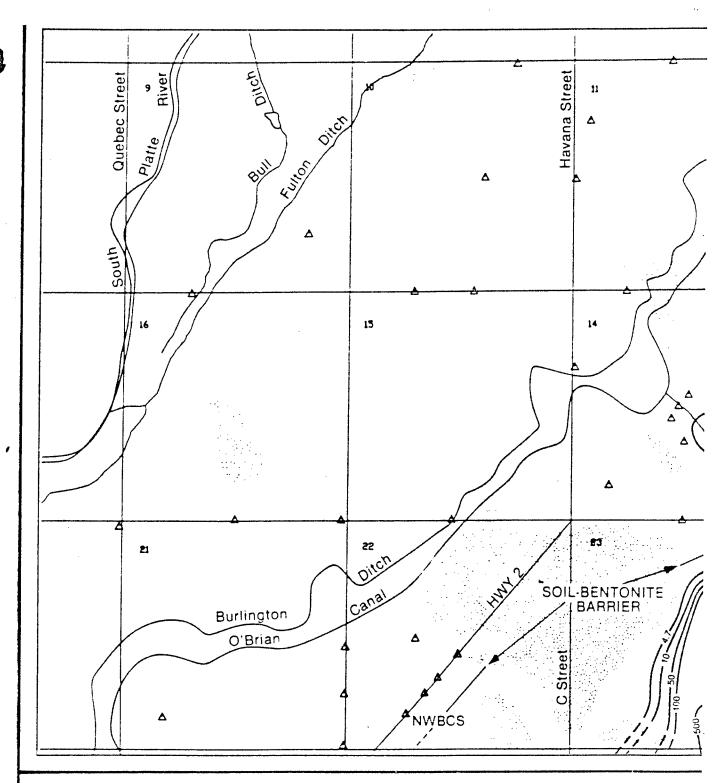
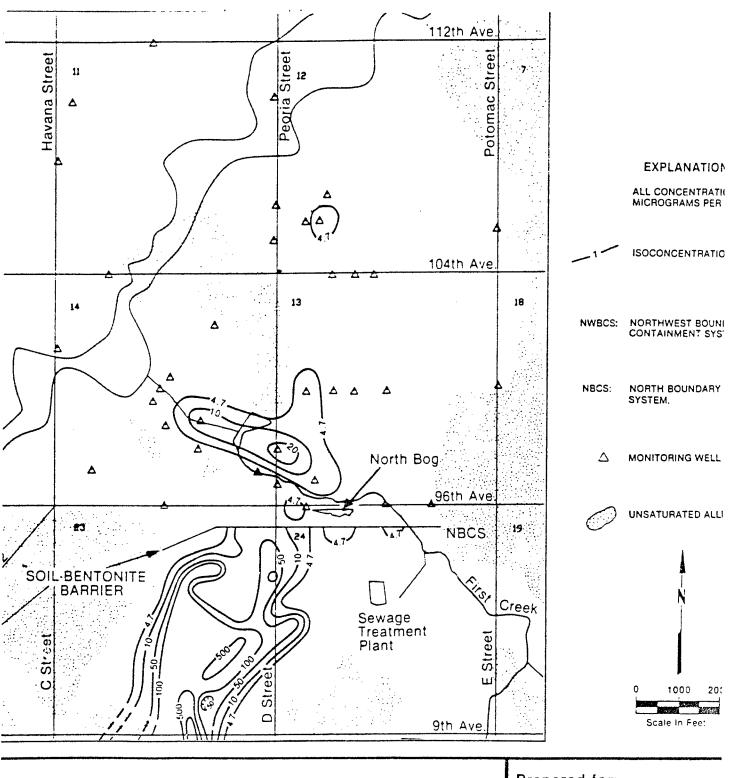
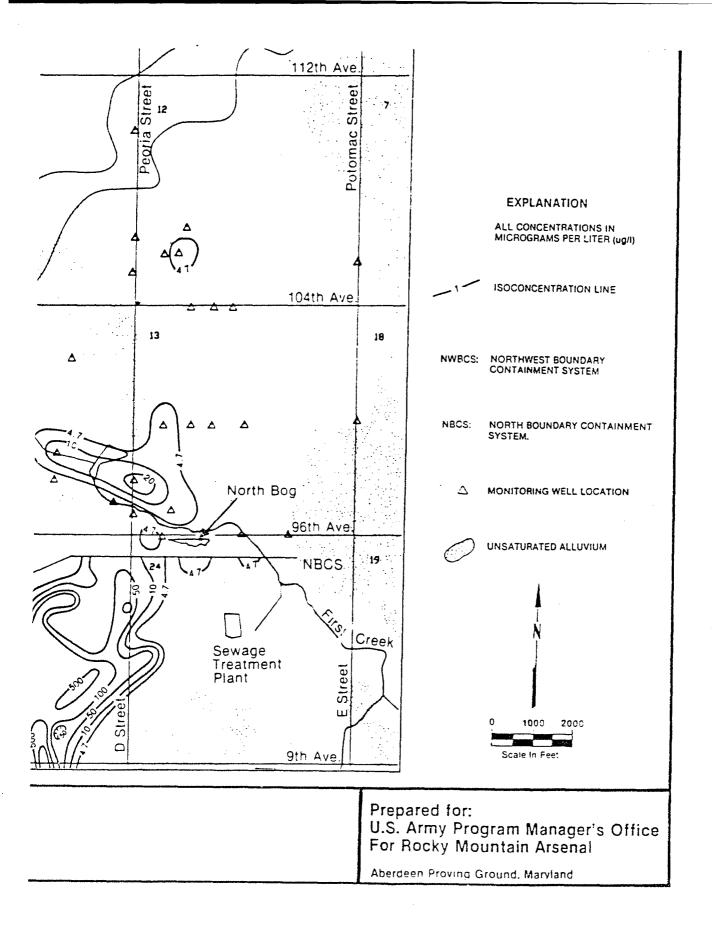


Figure F-7 CPMSO2 CONCENTRATION DISTRIBUTION,ug/I, 3RD QUARTER, FY87, ALLUVIAL AQUIFER

SOURCE.ESE 1985



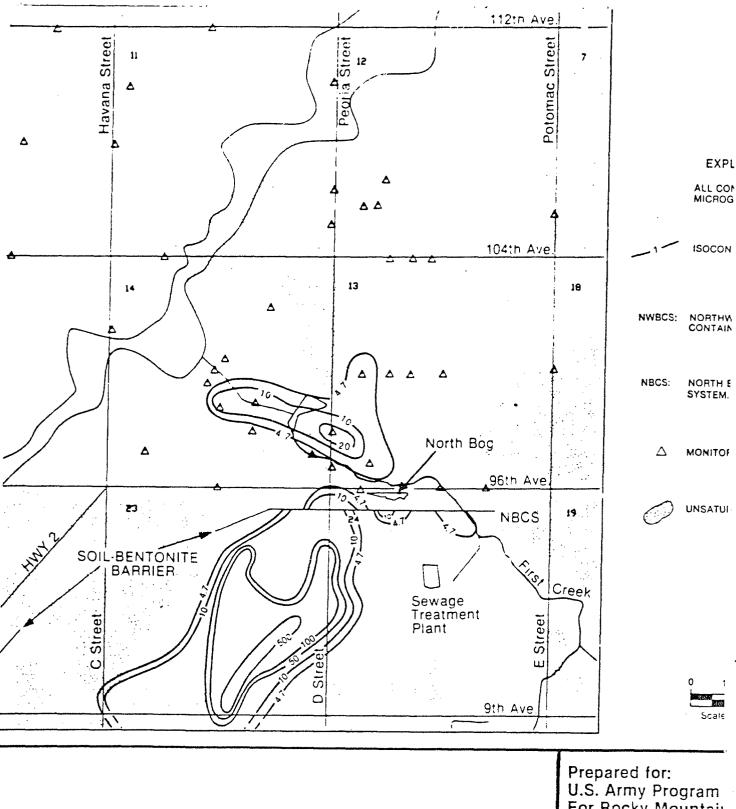
Prepared for: U.S. Army Program Manaç For Rocky Mountain Arser



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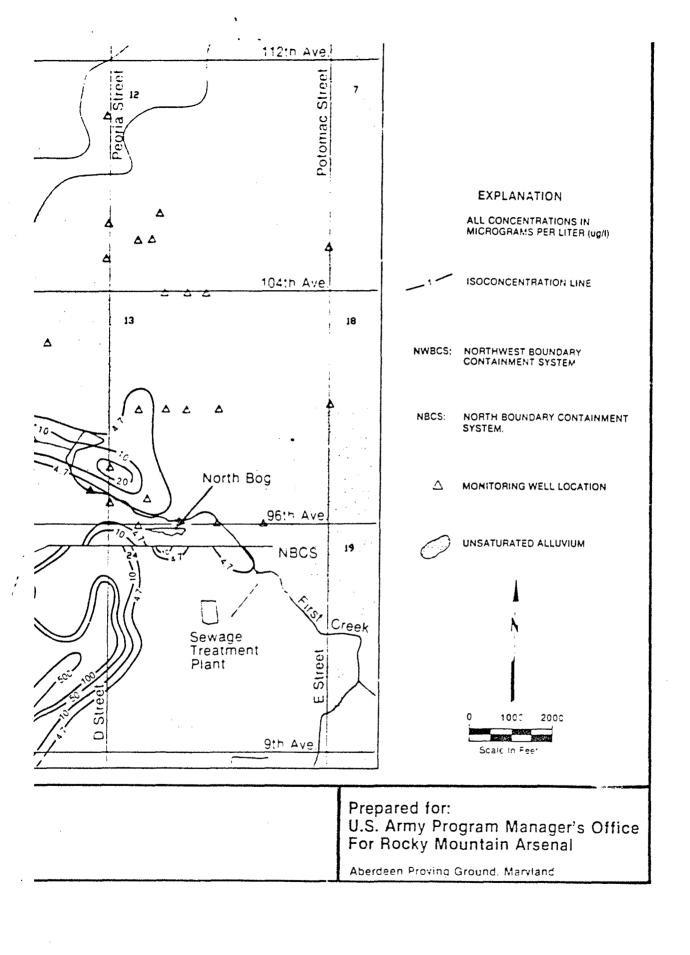
Figure F-8 CPMSO2 CONCENTRATION DISTRIBUTION, ug/l, 4TH QUARTER, FY87, ALLUVIAL AQUIFER

SOURCE:ESE.1983



U.S. Army Program
For Rocky Mountain

Aberdeen Proving Ground.



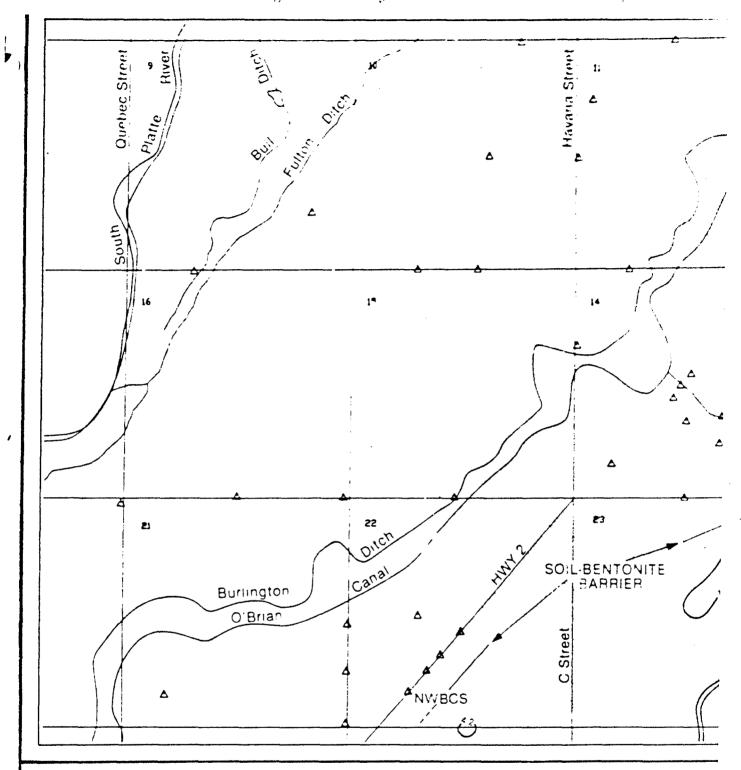
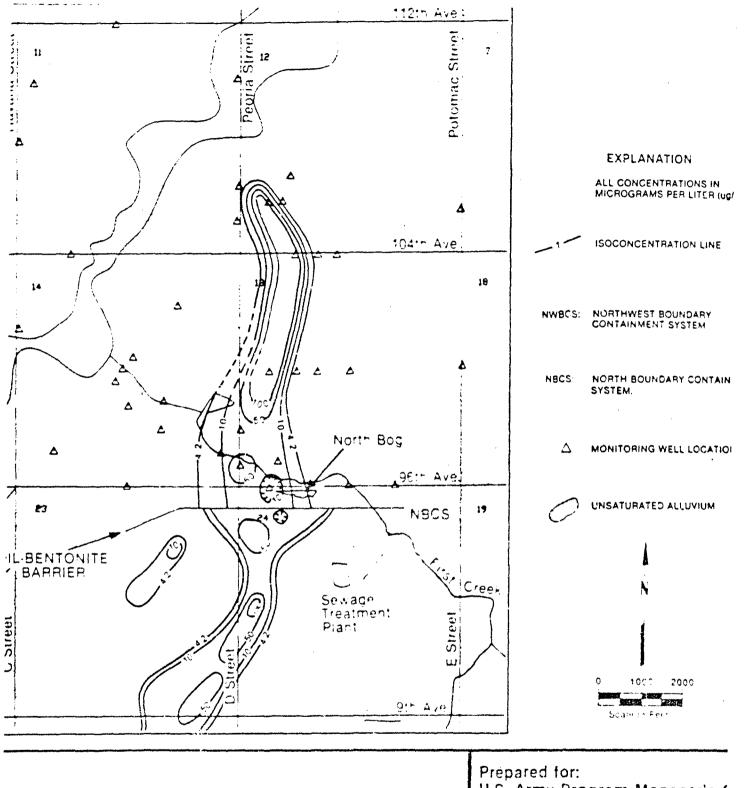
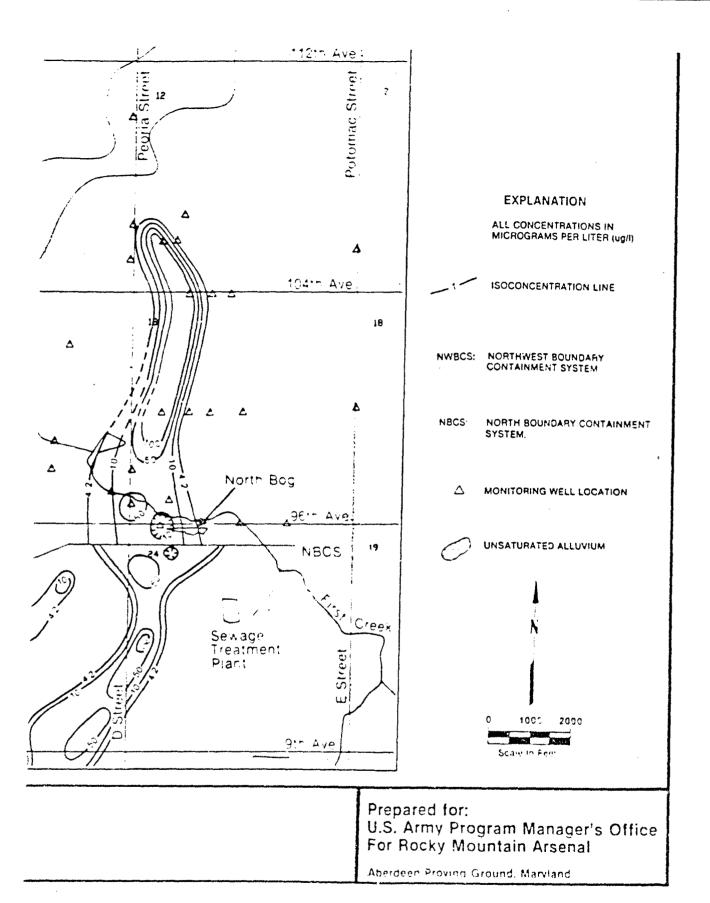


Figure F-9
CPMSO CONCENTRATION DISTRIBUTION, ug/I,
3RD QUARTER, FY87, ALLUVIAL AQUIFER

SOURCE.ESE 1988



Prepared for: U.S. Army Program Manager's ( For Rocky Mountain Arsenal



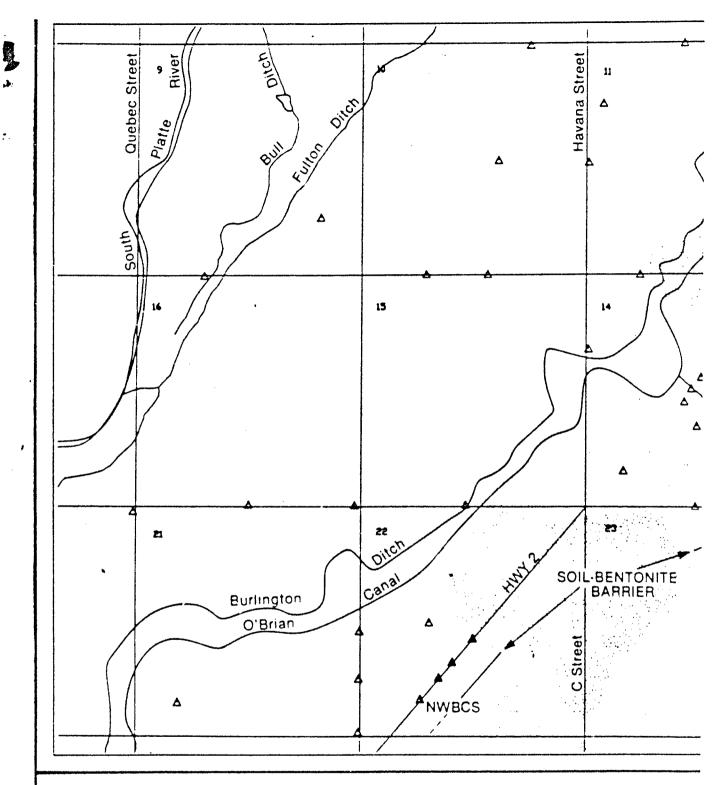
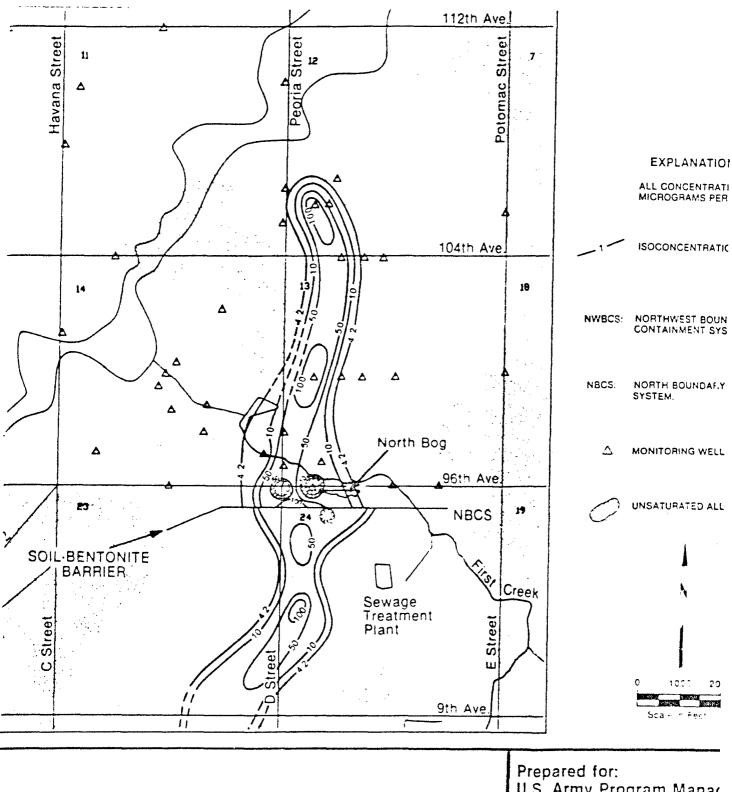
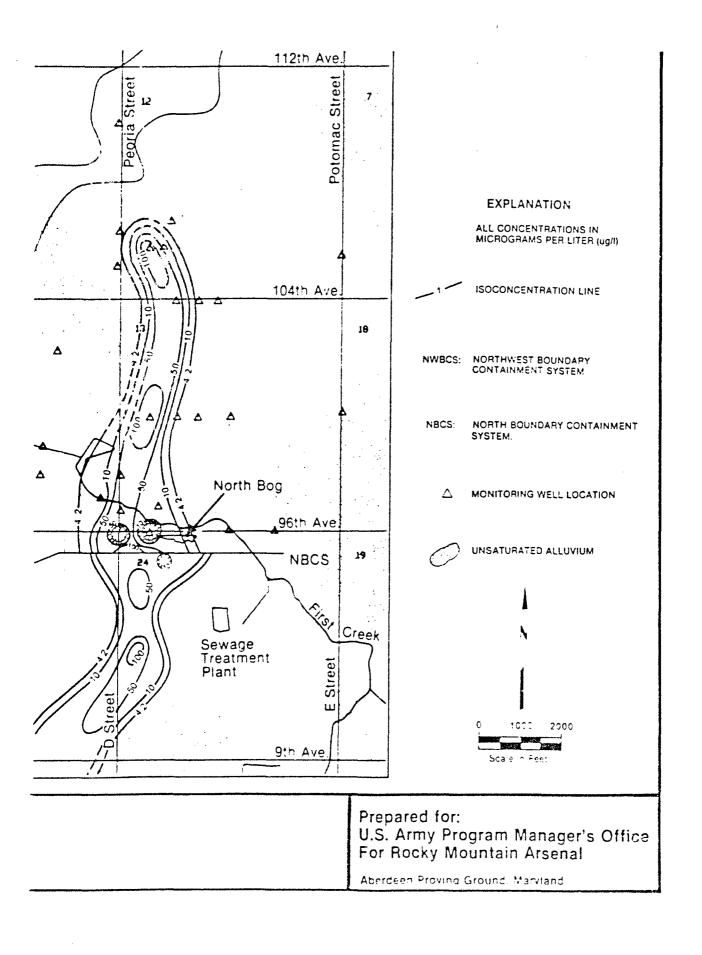


Figure F-10 CPMSO CONCENTRATION DISTRIBUTION, ug/l, 4TH QUARTER, FY87, ALLUVIAL AQUIFER

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Prepared for: U.S. Army Program Manaç For Rocky Mountain Arse



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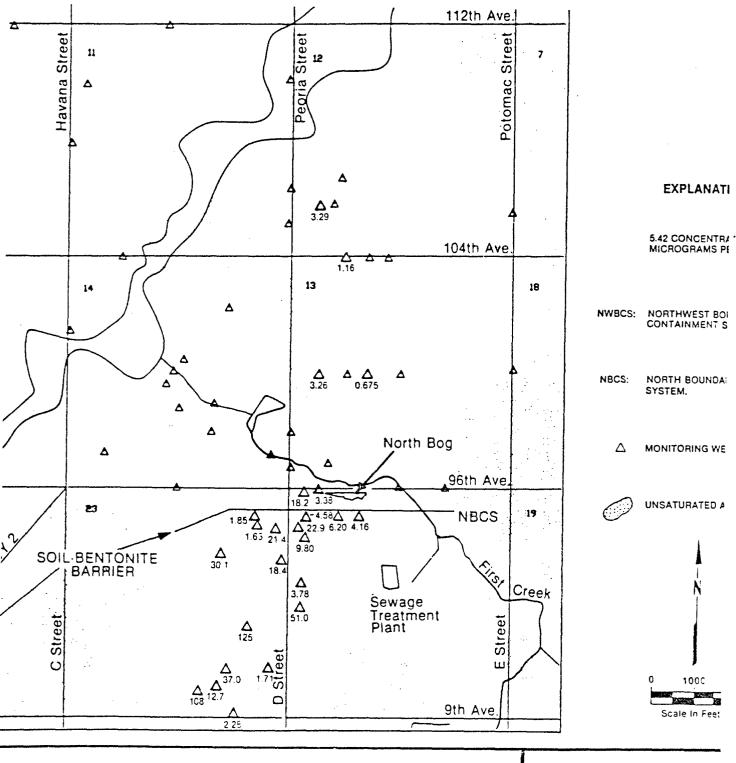
Figure F-11 CPMS CONCENTRATIONS EXCEEDING CERTIFIED REPORTING LIMITS, ug/l, 3RD QUARTER, FY87, ALLUVIAL AQUIFER

Burlington O'Brian

SOURCE,ESE,1988

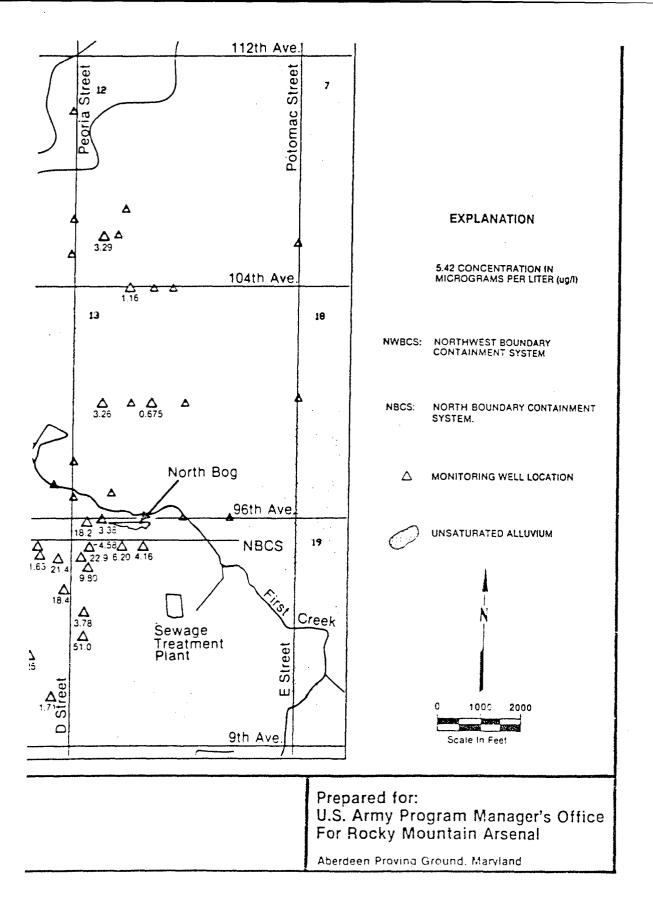
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Prepared for: U.S. Army Program Man For Rocky Mountain Ars



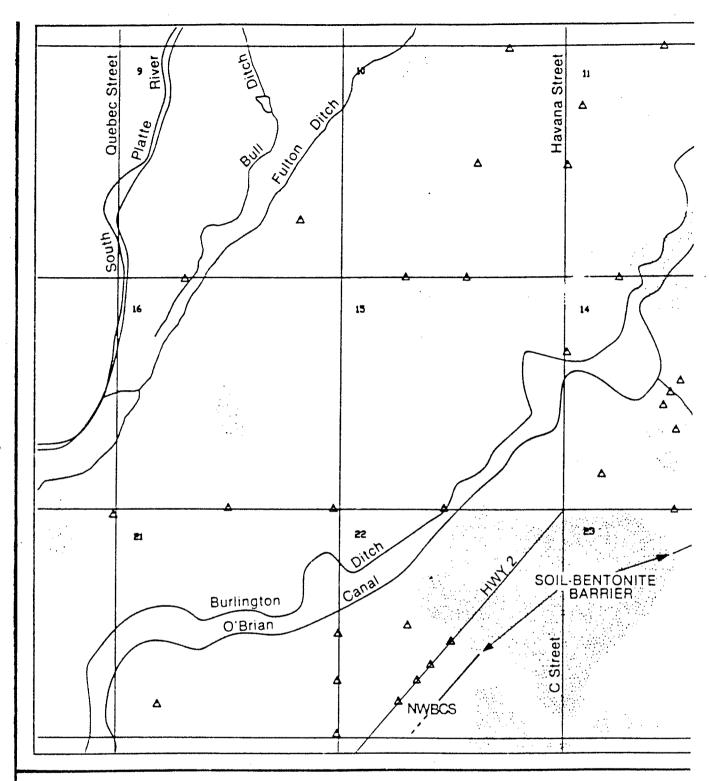
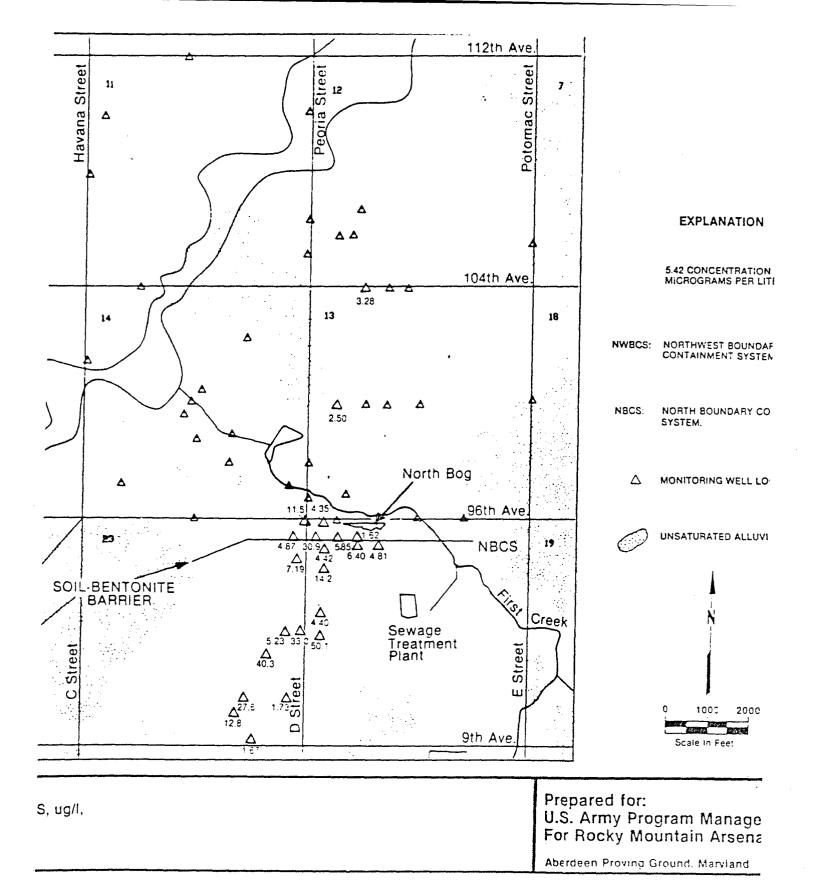
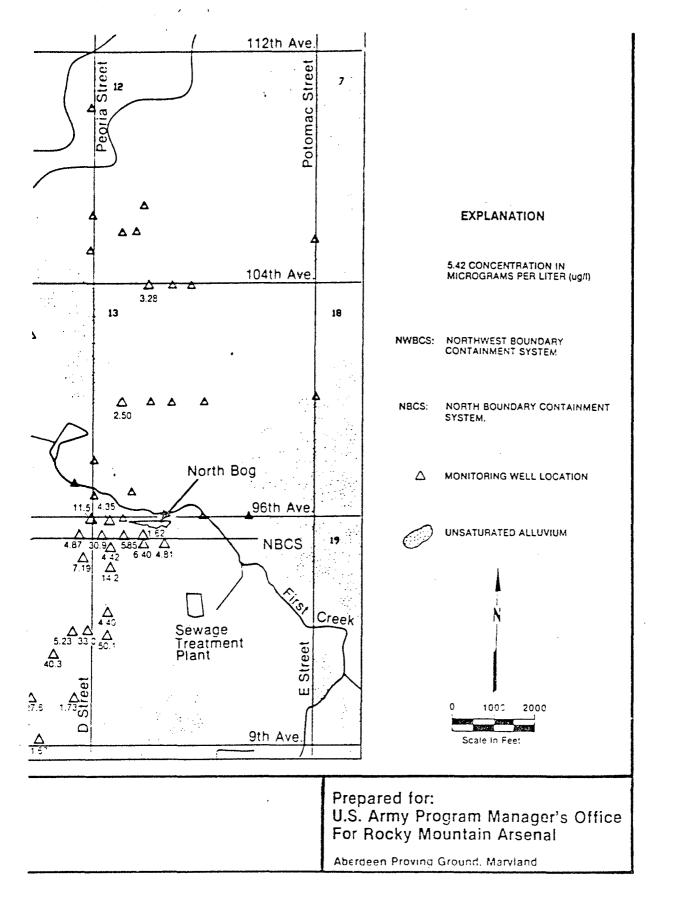


Figure F-12 CPMS CONCENTRATIONS EXCEEDING CERTIFIED REPORTING LIMITS, ug/l, 4TH QUARTER, FY87, ALLUVIAL AQUIFER

SOURCE:ESE.1988

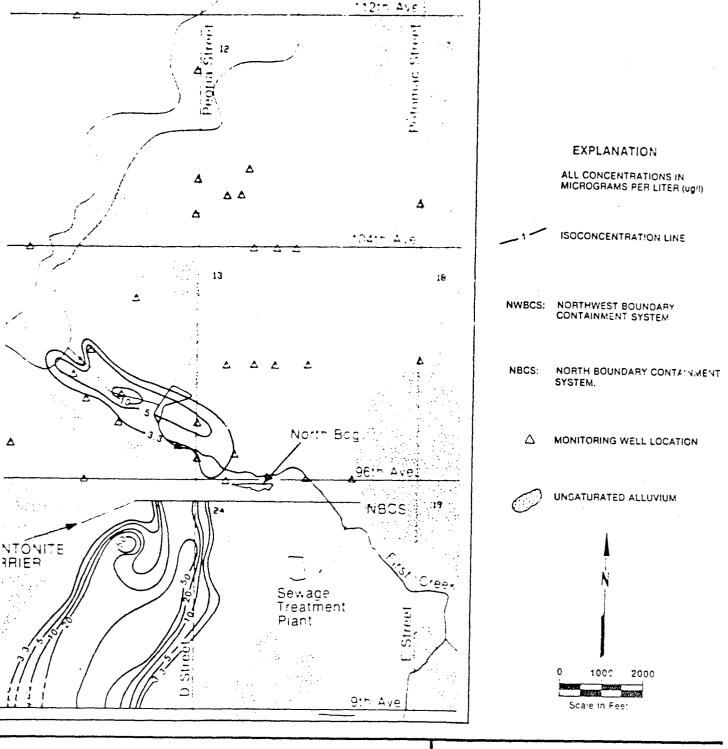




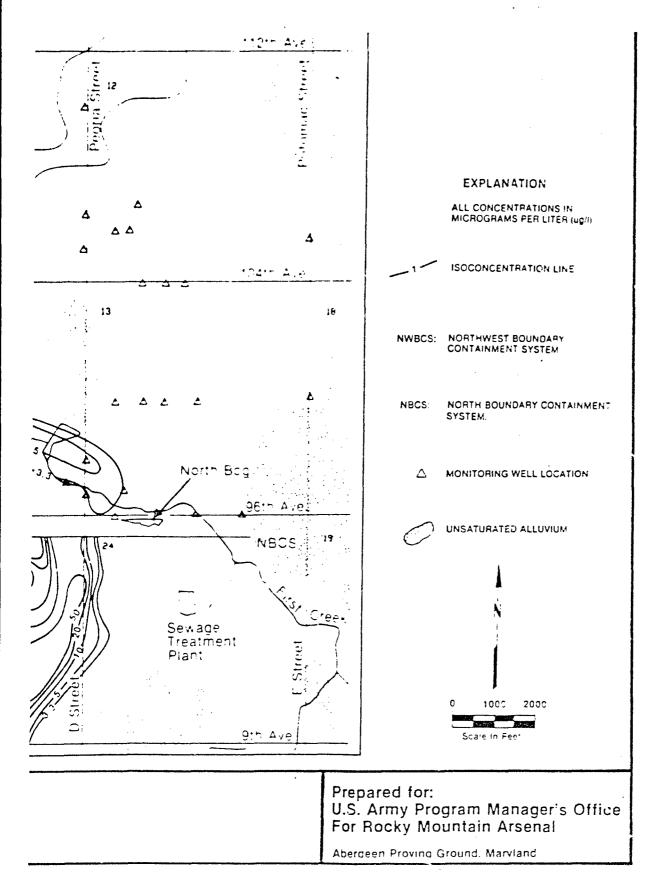
Havana Street Quebec Street 11 South 15 .23 21 SOIL BENTONITE Burlington O'Brian NVyBCS

Figure F-13
1,4 DITHIANE CONCENTRATION DISTRIBUTION, ug/l,
3RD QUARTER, FY87.ALLUVIAL AQUIFER

SOURCE.ESE 1988



Prepared for: U.S. Army Program Manager's Office For Rocky Mountain Arsenal



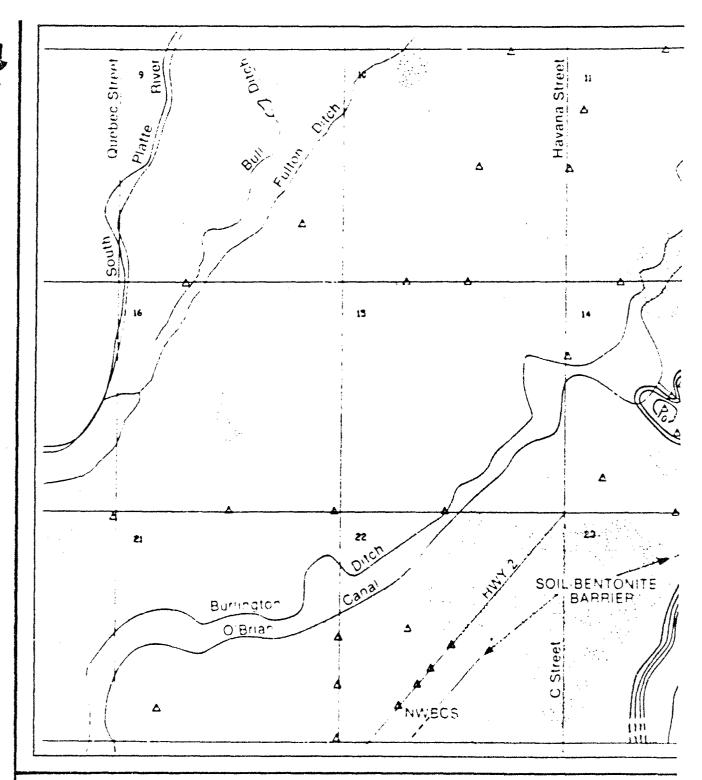
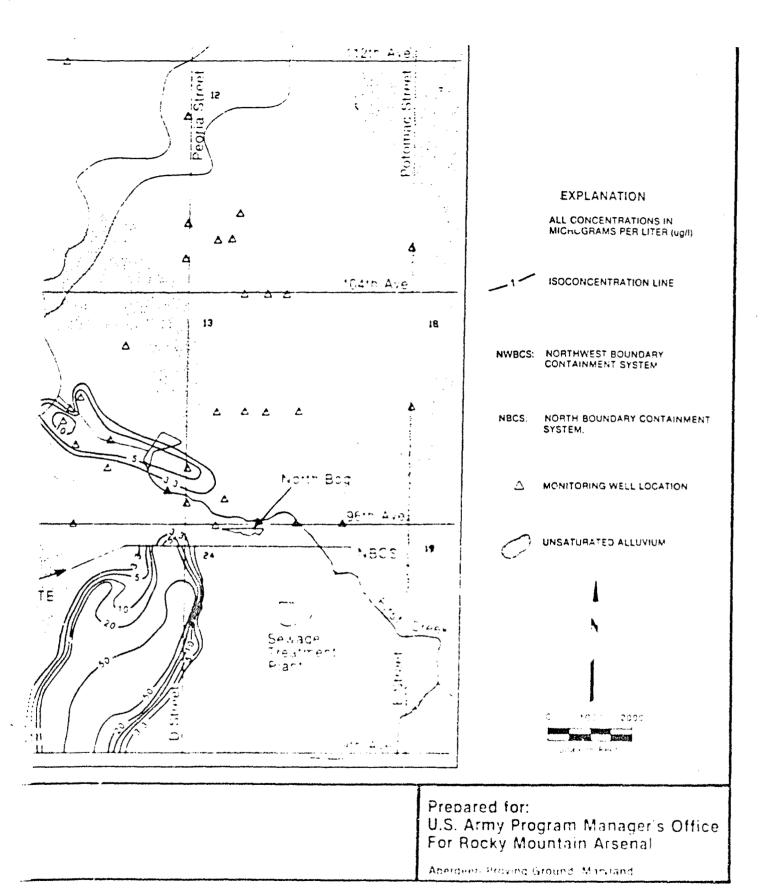
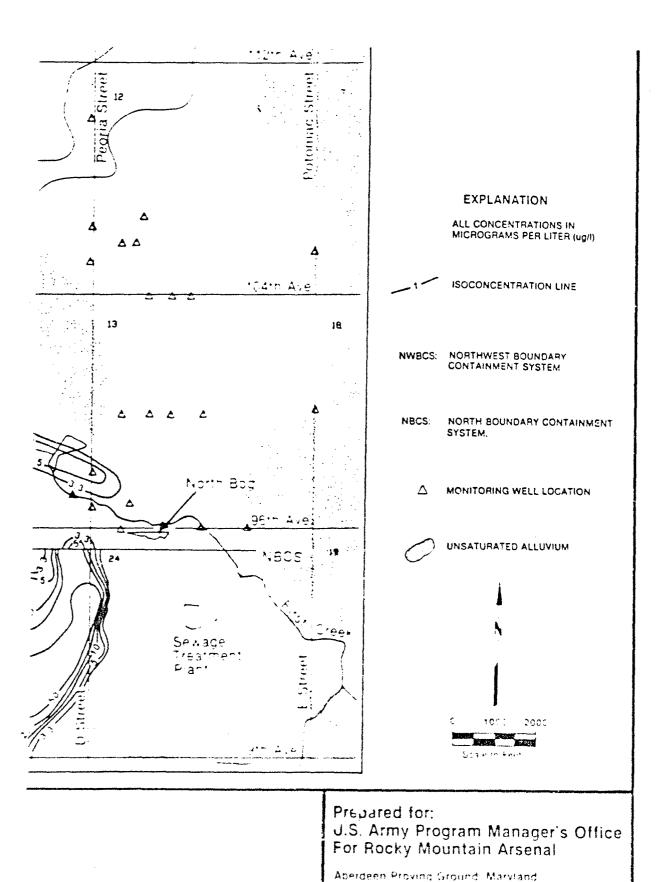


Figure F-14
1.4 DITHIANE CONCENTRATION DISTRIBUTION, ug/l,
4TH QUARTER, FY87, ALLUVIAL AQUIFER

SOUPCE EST, 1984





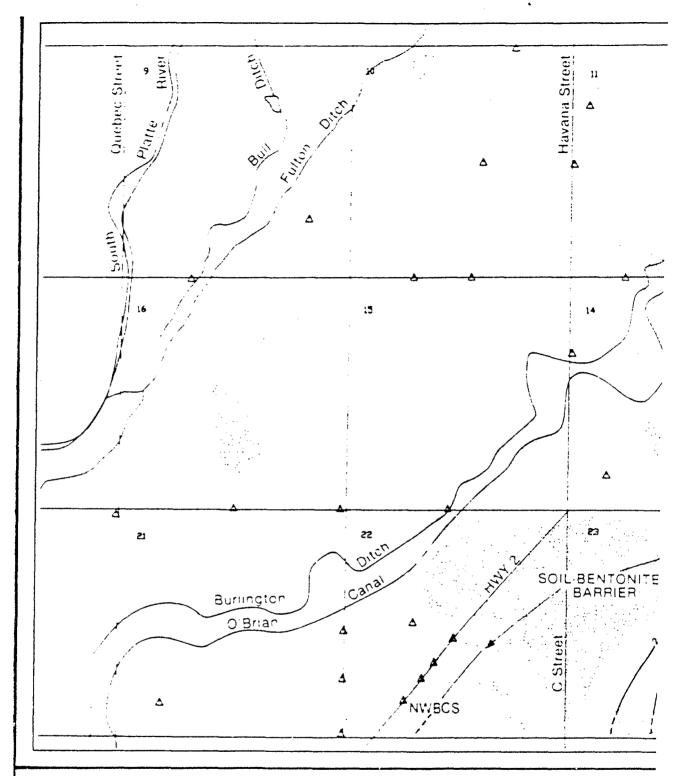
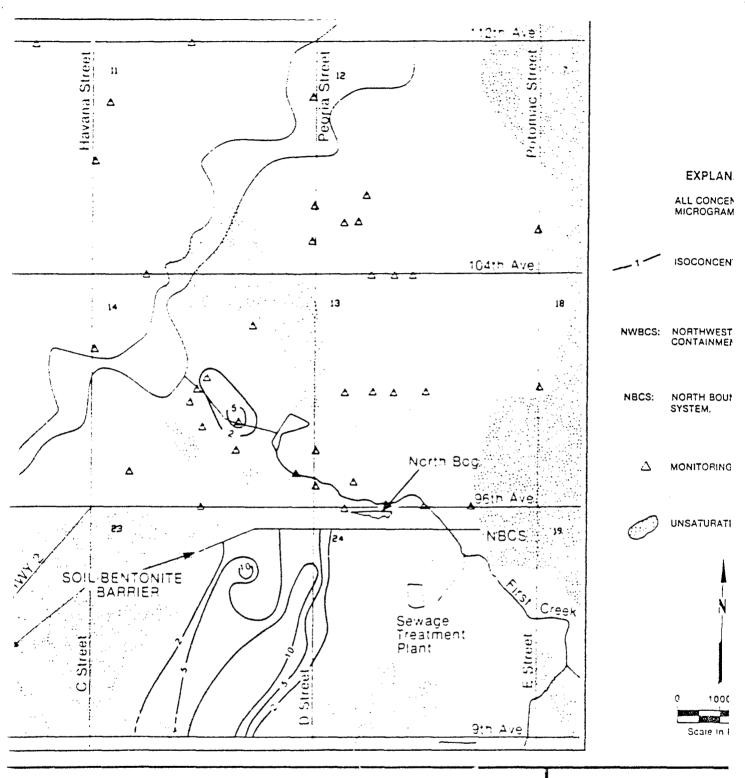


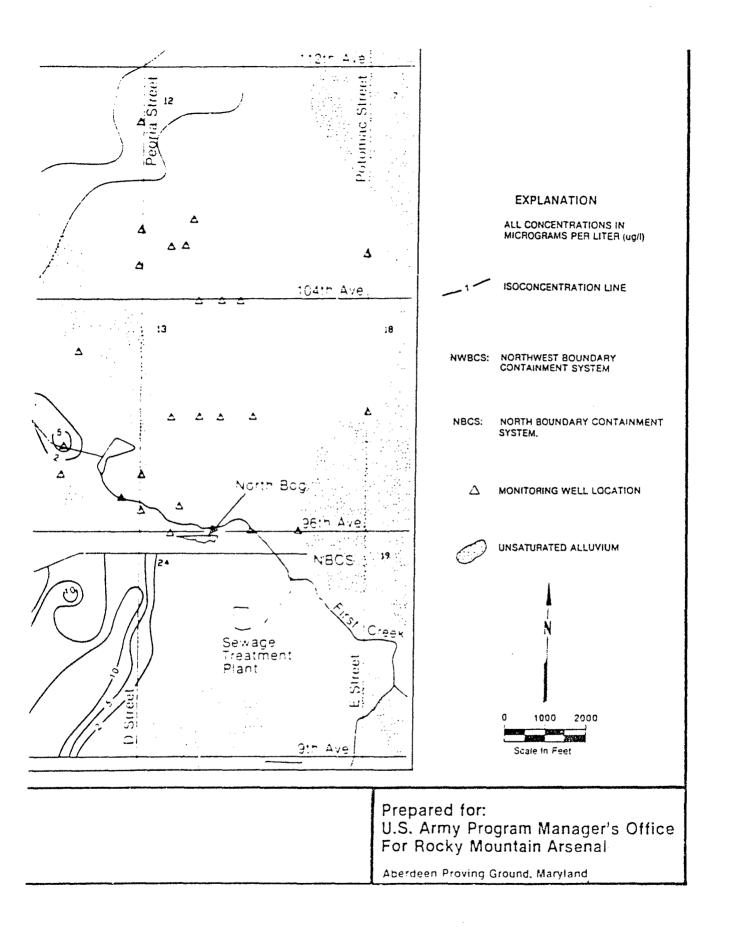
Figure F-15
1,4 OXATHIANE CONTENTRATION DISTRIBUTION, ug/l,
3RD QUARTER, FY87, ALLUVIAL AQUIFER

SOUPOE EDE 1988



Prepared for: U.S. Army Program M. For Rocky Mountain A

Aberdeen Proving Ground, Ma



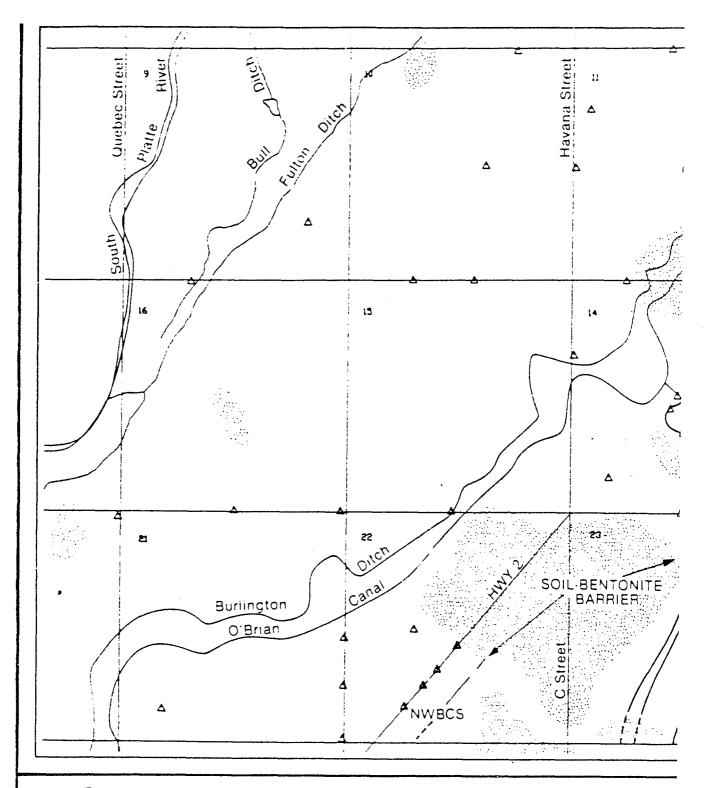
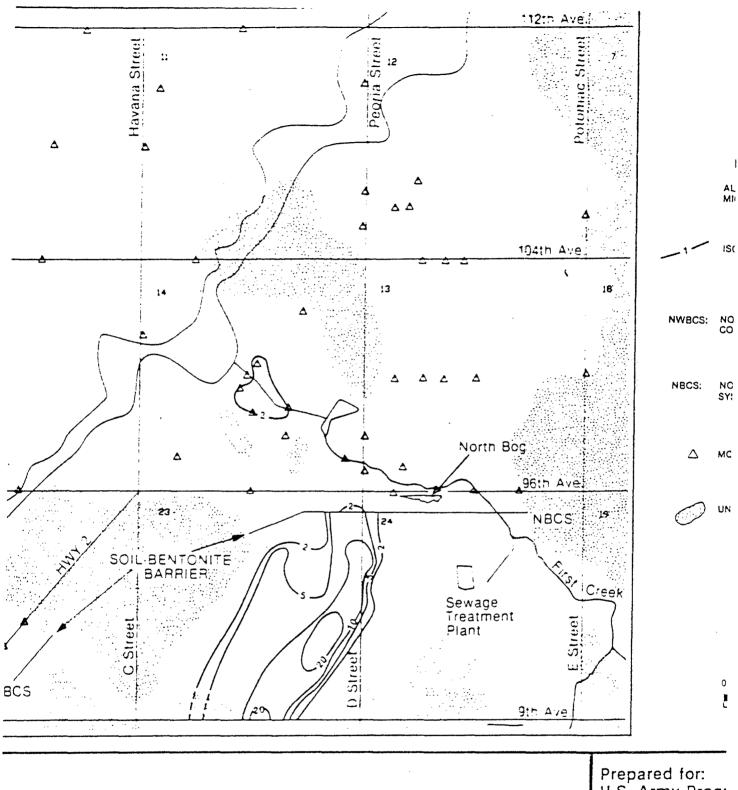


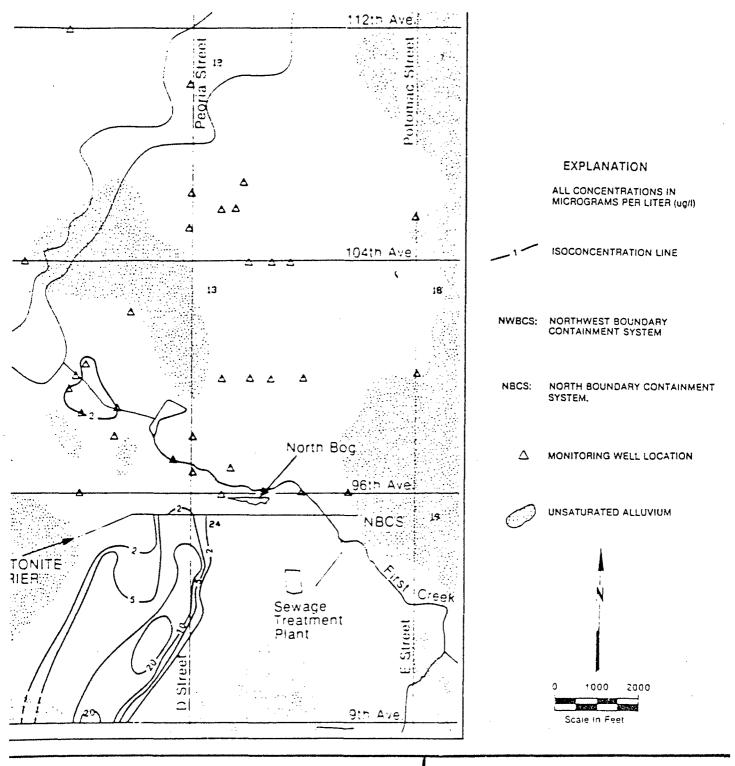
Figure F-16
1,4 OXATHAINE CONCENTRATION DISTRIBUTION, ug/l,
4TH QUARTER, FY87, ALLUVIAL AQUIFER

SOUPCELESE 1989



Prepared for: U.S. Army Progr For Rocky Mour

Aberdeen Proving Grc.



Prepared for: U.S. Army Program Manager's Office For Rocky Mountain Arsenal

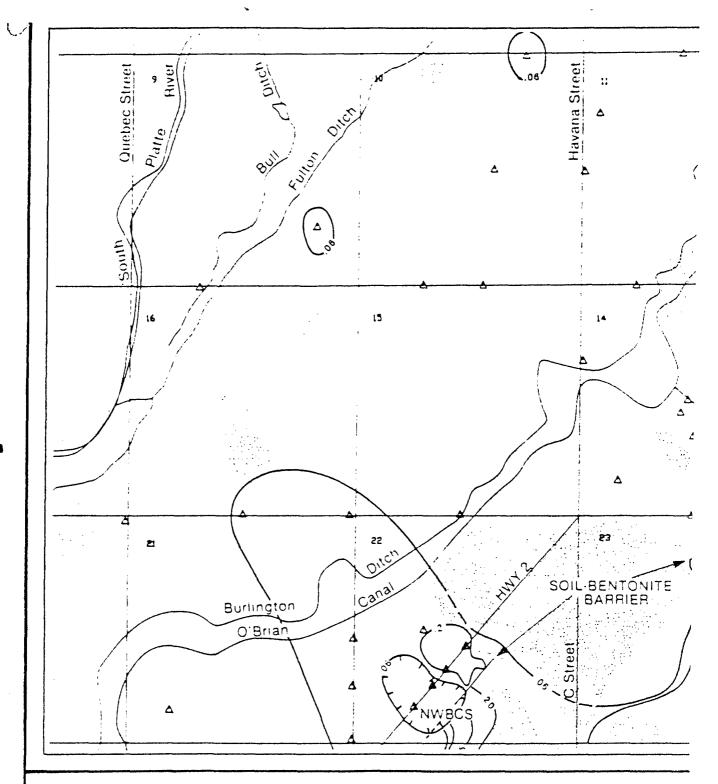
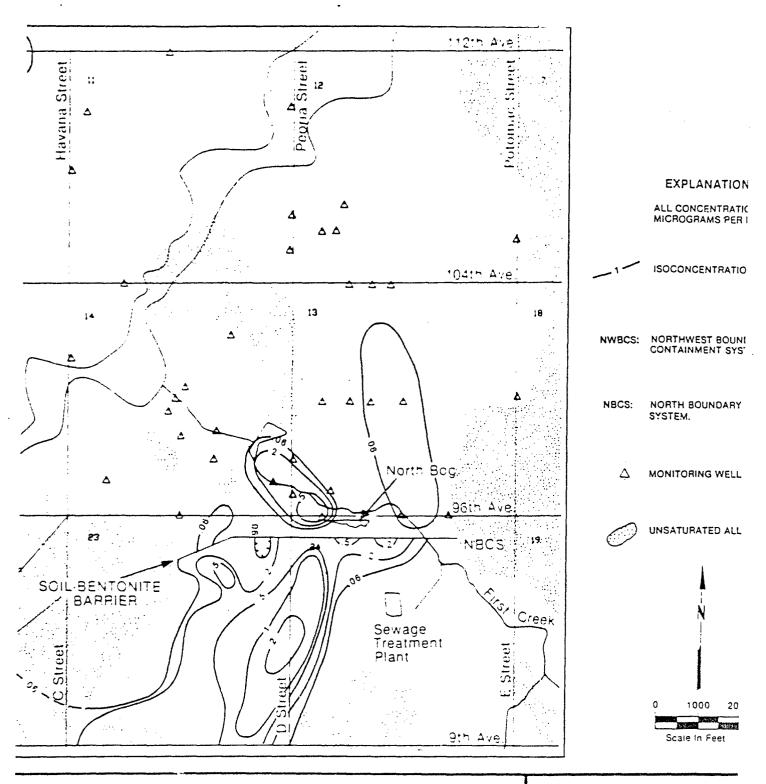
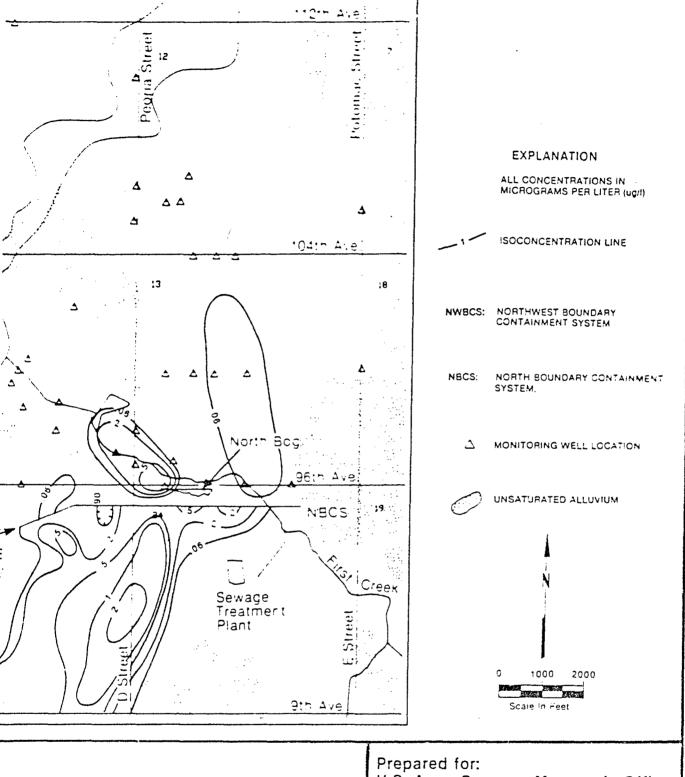


Figure F-17 DIELDRIN CONCENTRATION DISTRIBUTION, ug/l, 3RD QUARTER, FY87, ALLUVIAL AQUIFER

SOURCE.ESE 1988



Prepared for: U.S. Army Program Manag For Rocky Mountain Arse



Prepared for: U.S. Army Program Manager's Office For Rocky Mountain Arsenal

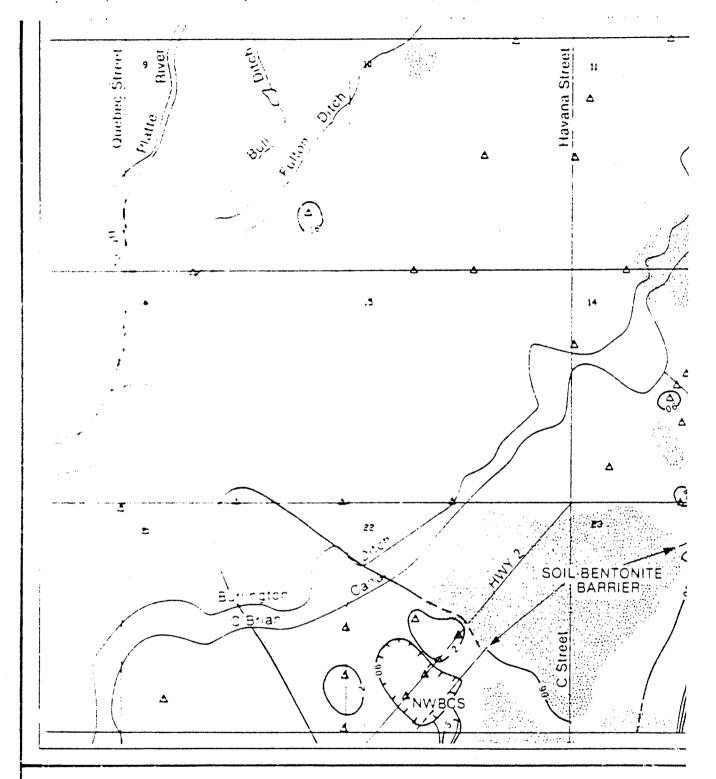
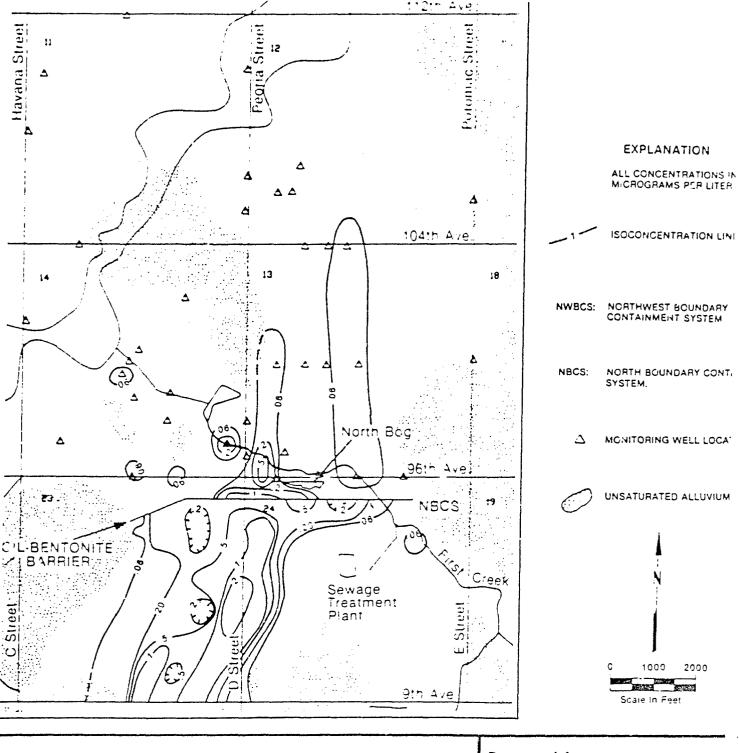
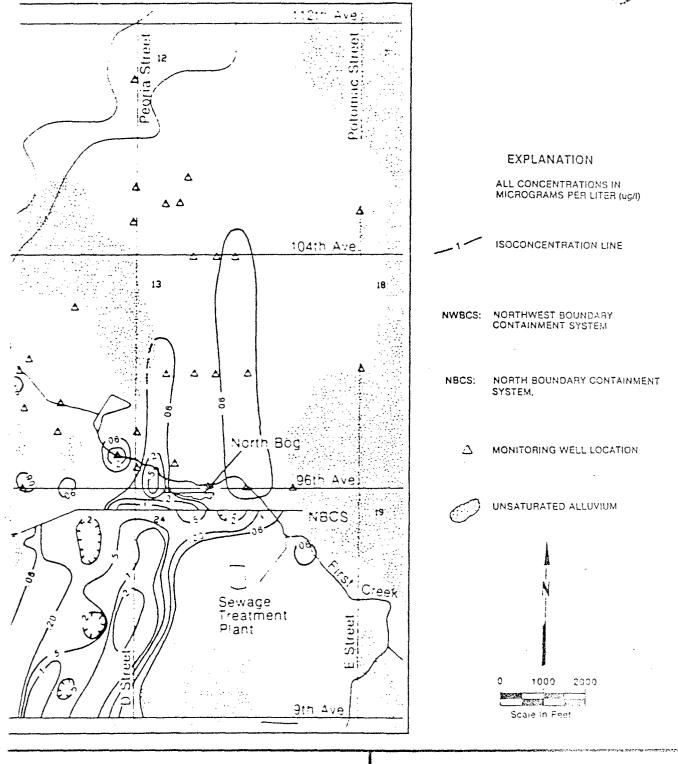


Figure F-18
DIELDRIN CONCENTRATION DISTRIBUTION, ug/l, 4TH QUARTER, FY87, ALLUVIAL AQUIFER

SCUPCELESE 1988



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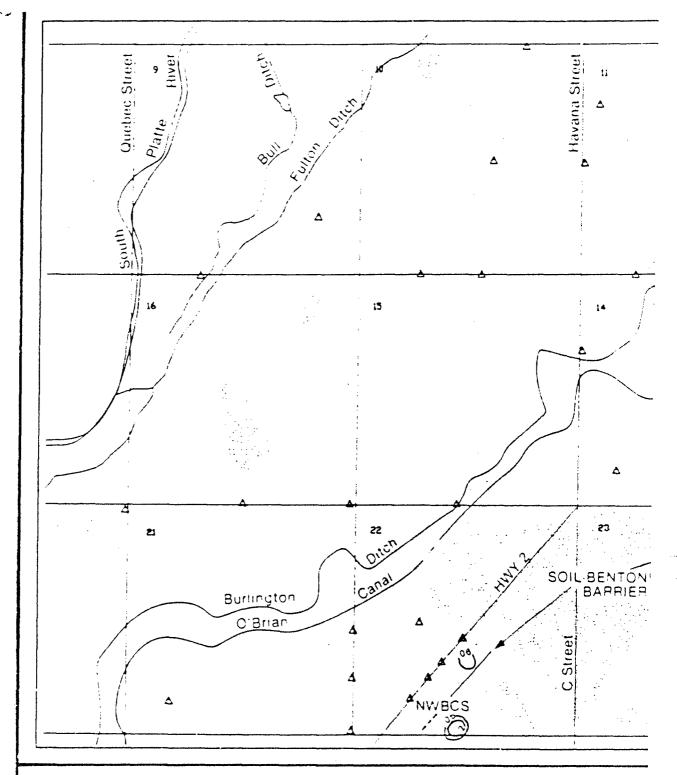
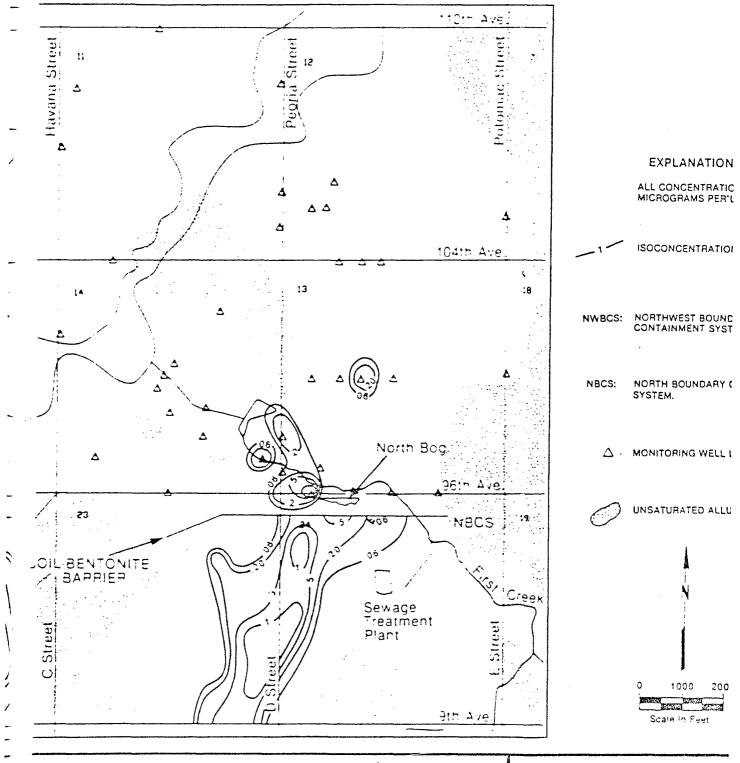


Figure F-19 ENDRIN CONCENTRATION DISTRIBUTION, ug/l, 3RD QUARTER, FY37. ALLUVIAL AQUIFER

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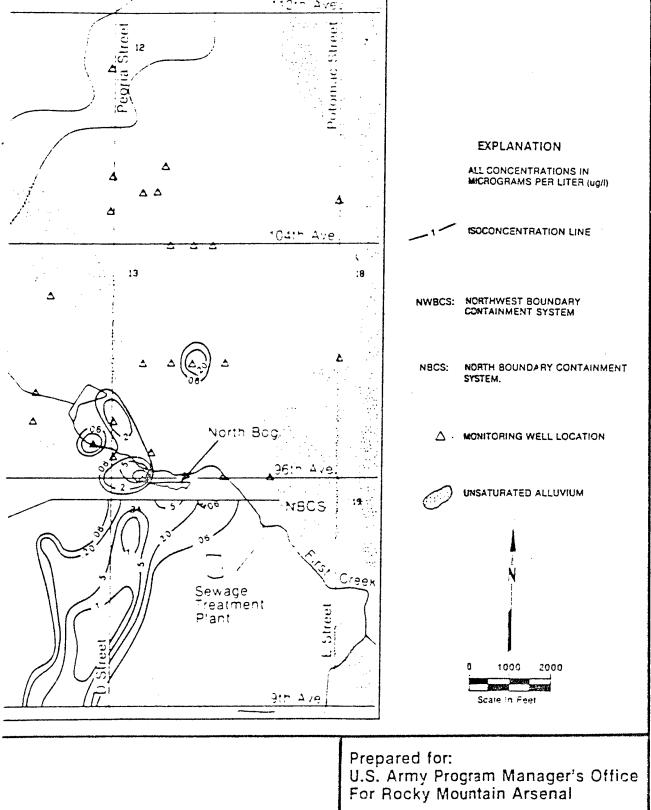
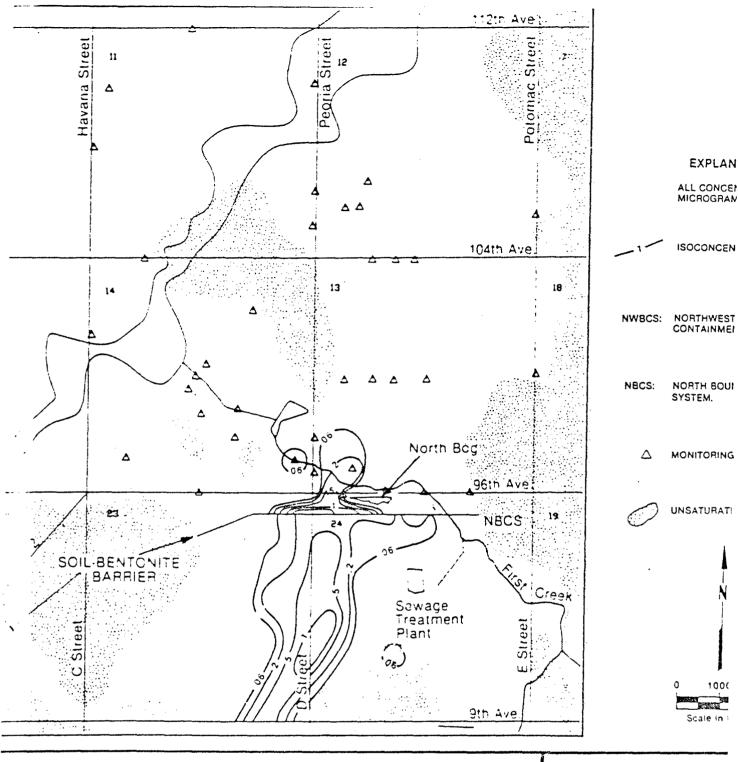


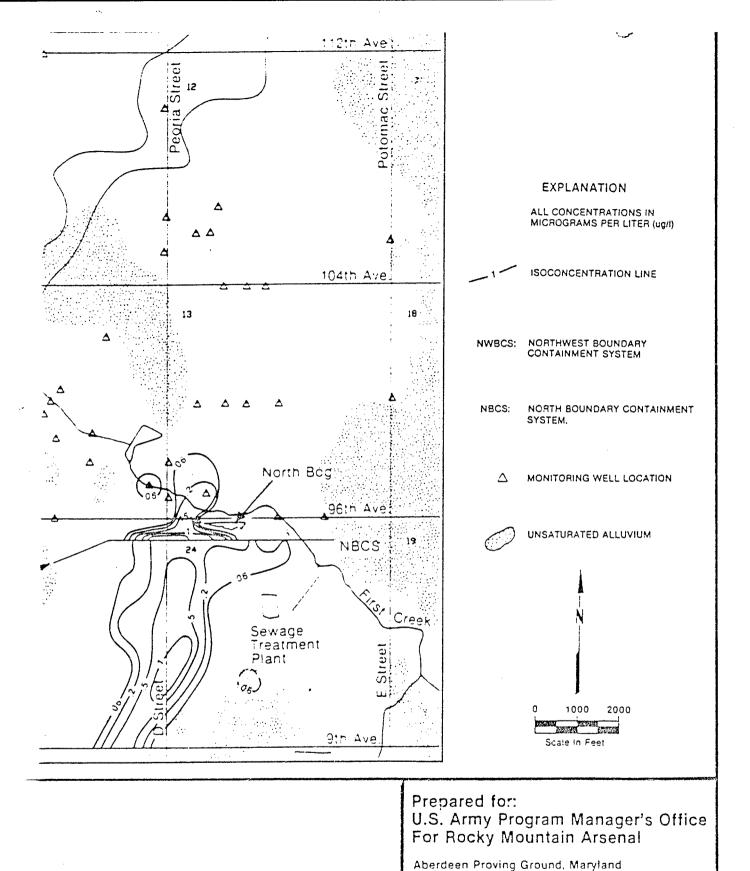
Figure F-20 ENDRIN CONCENTRATION DISTRIBUTION, ug/l, 4TH QUARTER, FY87, ALLUVIAL AQUIFER

SOURCE.ESE.1988



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Aberdeen Proving Ground, Ma



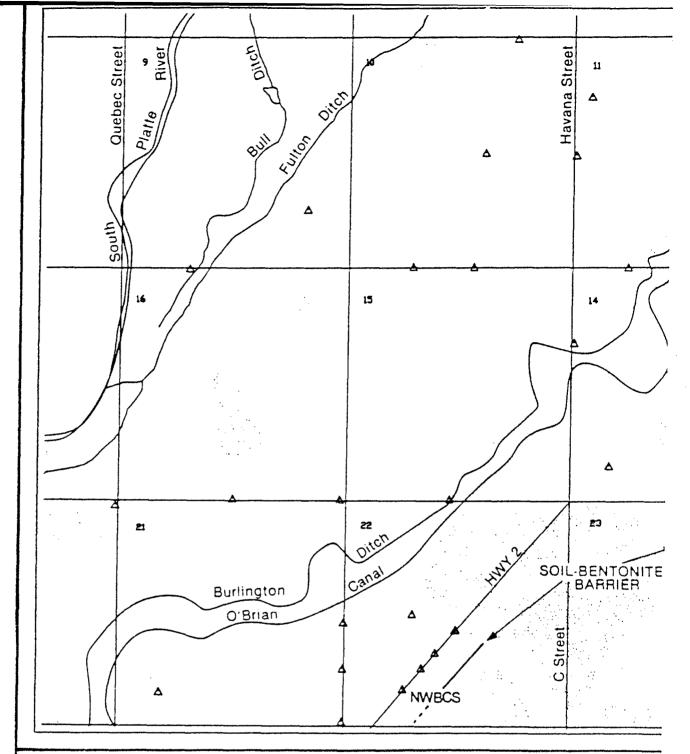
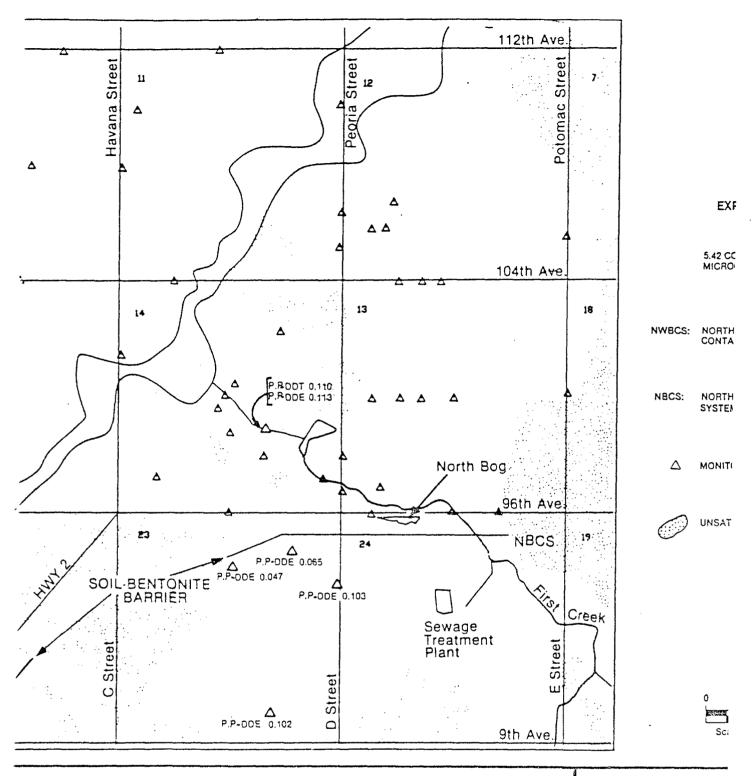


Figure F-21 ORGANOCHLORINE PESTICIDES (P.P-DDE, P.P-DDT, ALDRIN, ISODRIN) CONCENTRATION Ug/I, 3RD QUARTER, FY87, ALLUVIAL AQUIFER

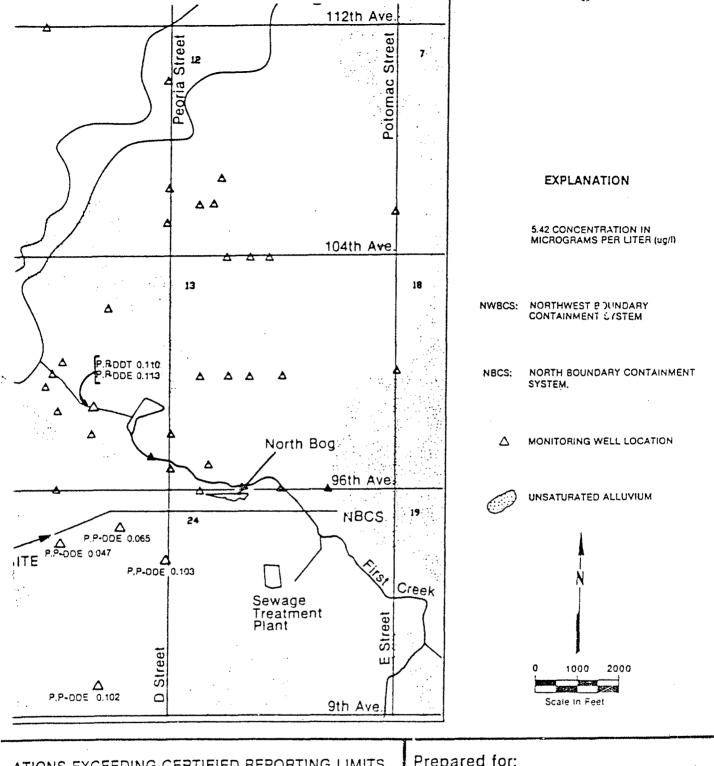
SOURCE: ESE, 1988



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ATIONS EXCEEDING CERTIFIED REPORTING LIMITS,

Prepared for:

U.S. Army Program Manager's Office For Rocky Mountain Arsenal

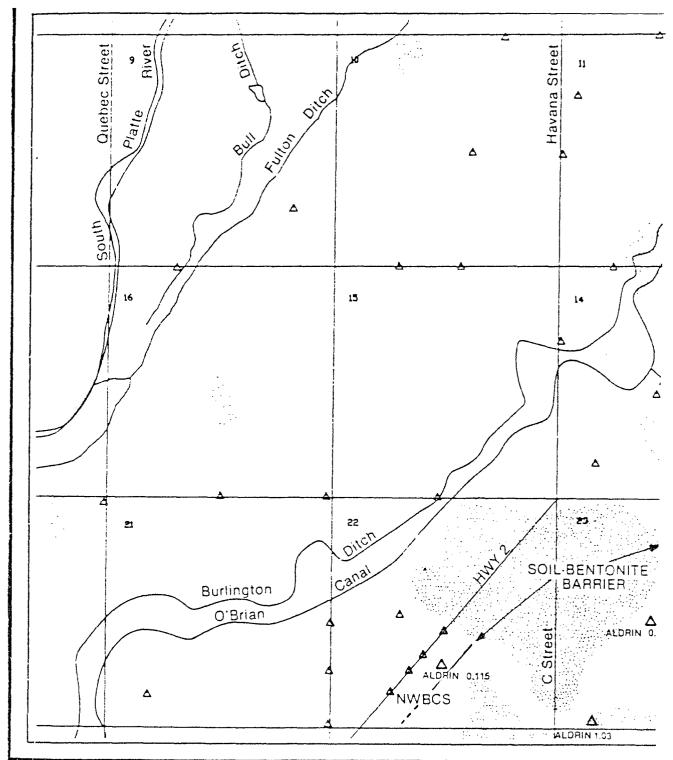
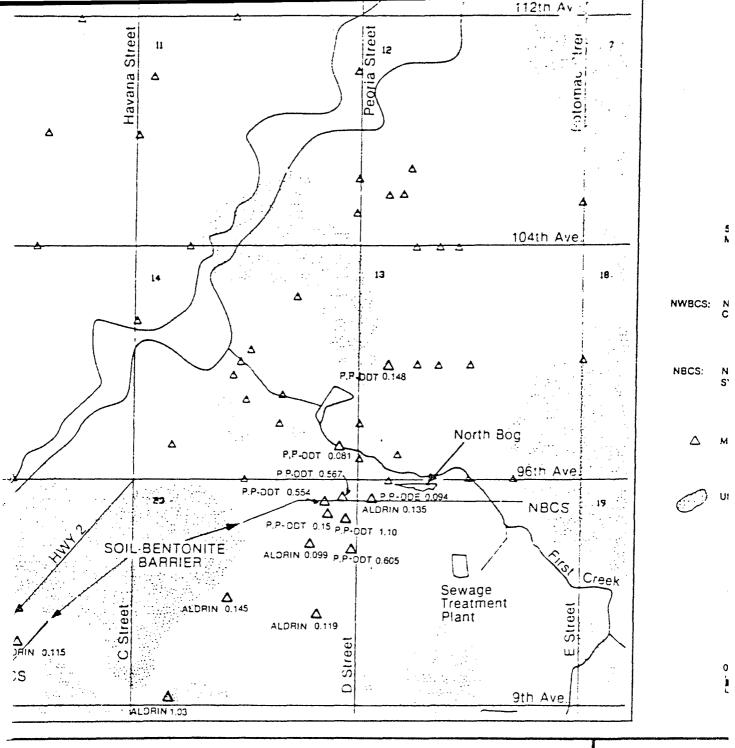


Figure F-22
ORGANOCHLORINE PESTICIDES (P,P-DDE, P,P-DDT, ALDRIN, ISODRIN) CONCENTRATICUG/I, 4TH QUARTER, FY87, ALLUVIAL AQUIFER

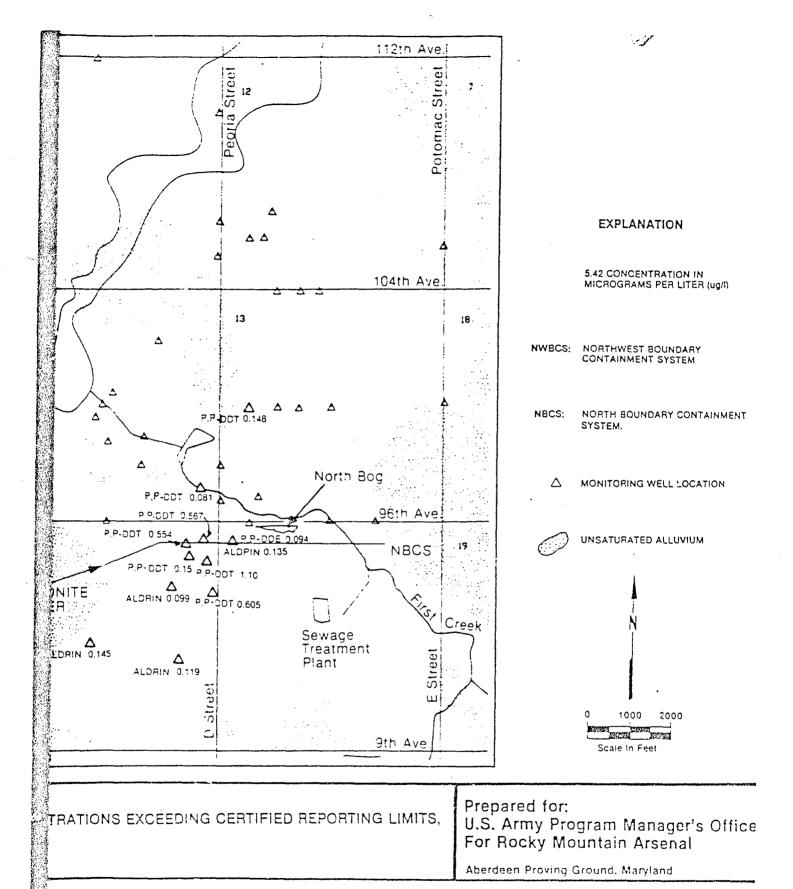
SOURCE: ESE, 1988



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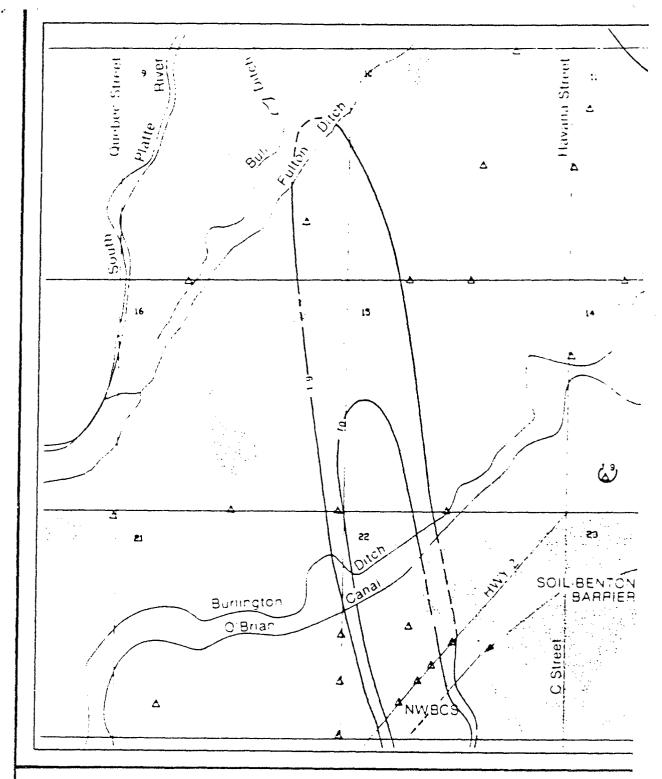
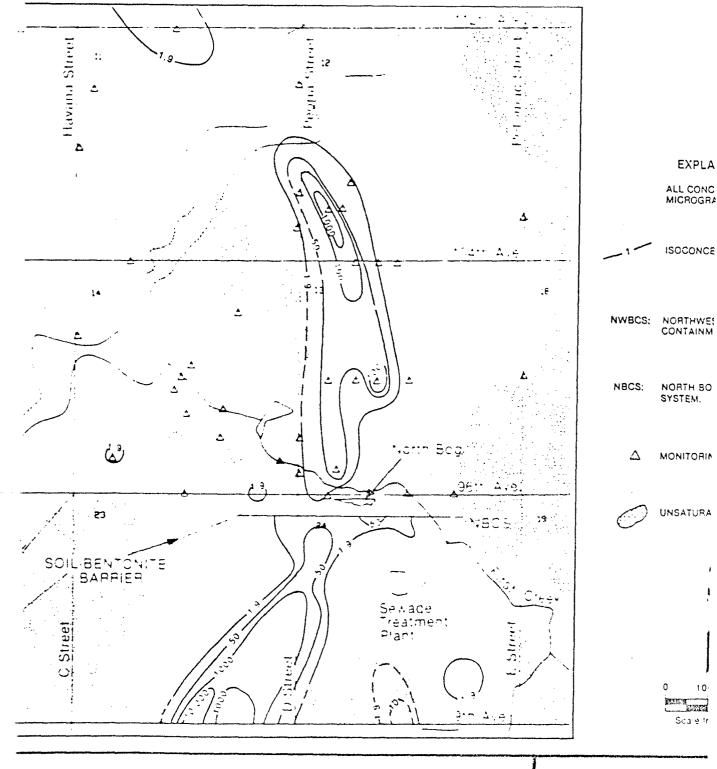


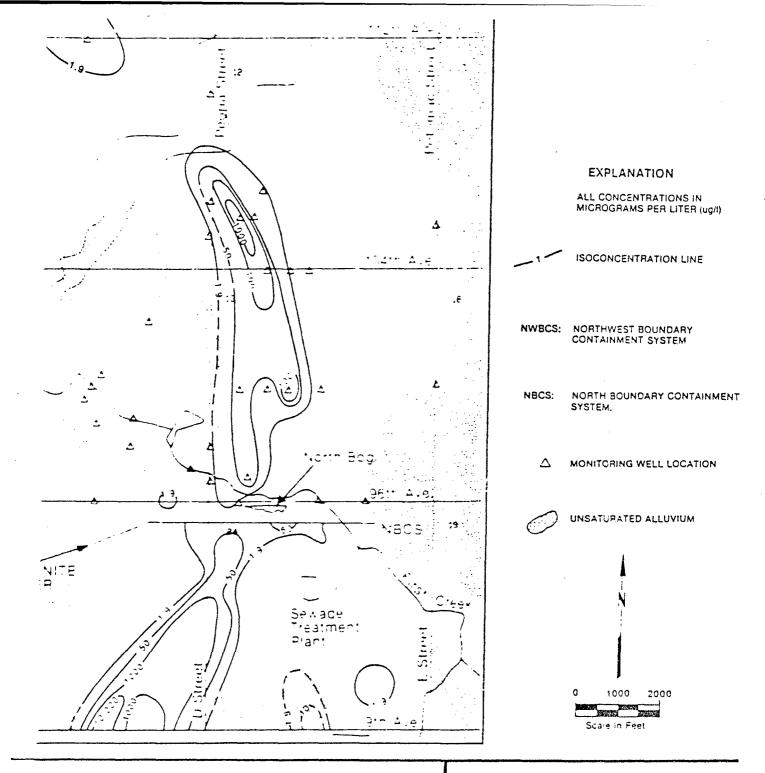
Figure F-23 CHLOROFORM CONCENTRATION DISTRIBUTION, ug/l, 3RD QUARTER, FY87, ALLUVIAL AQUIFER

SOURCE ESE 1988



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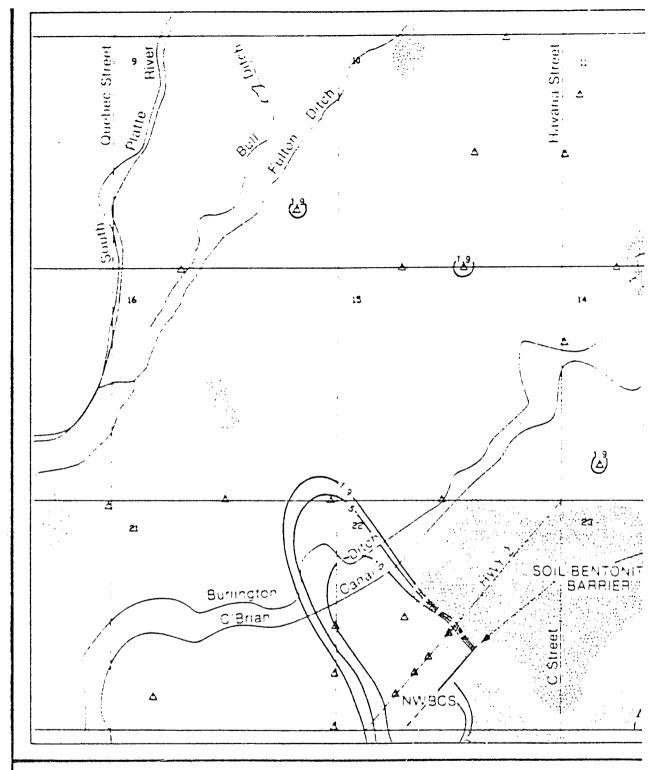
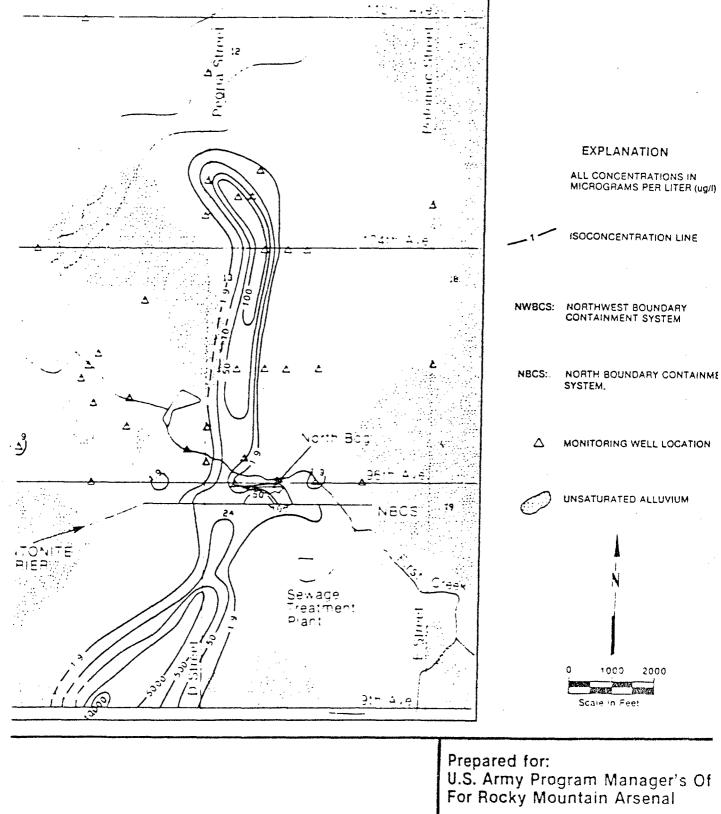
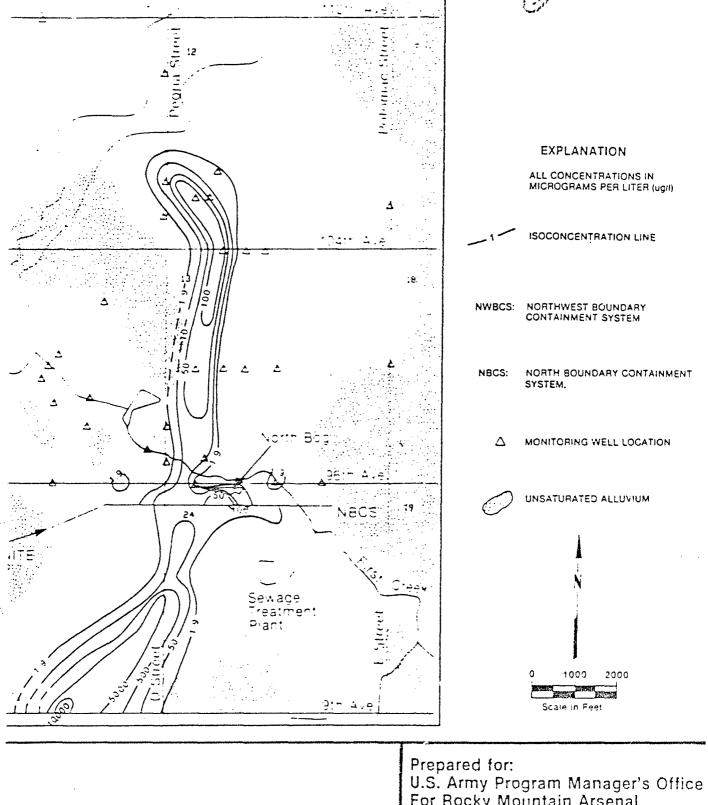


Figure F-24
CHLOROFORM CONCENTRATION DISTRIBUTION, ug/l,
4TH QUARTER, FY87, ALLUVIAL AQUIFER

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Prepared for: U.S. Army Program Manager's Office For Rocky Mountain Arsenal

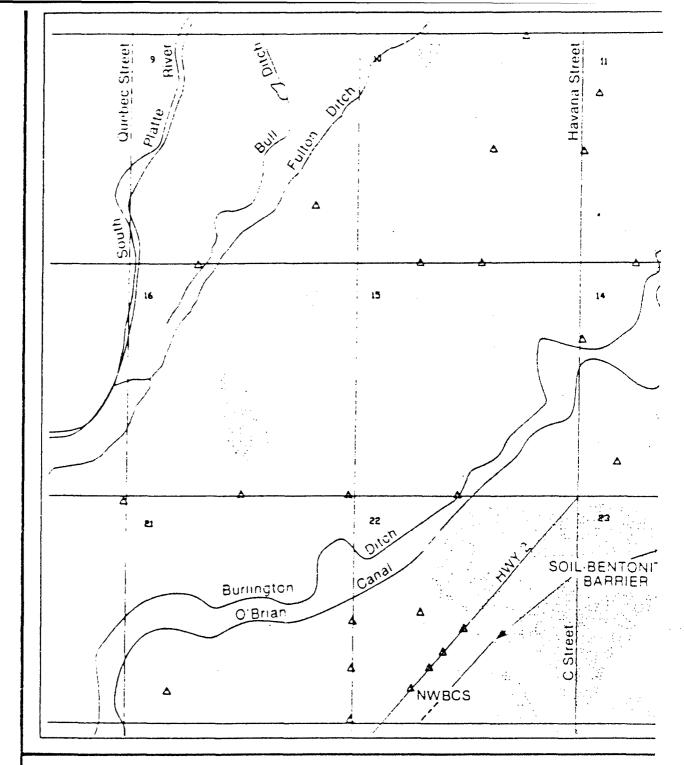


Figure F-25 TETRACHLOROETHENE CONCENTRATION DISTRIBUTION, ug/l, 3RD QUARTER, FY87, ALLUVIAL AQUIFER

\*12\*\* Ave:

SOURCE.ESE 1988

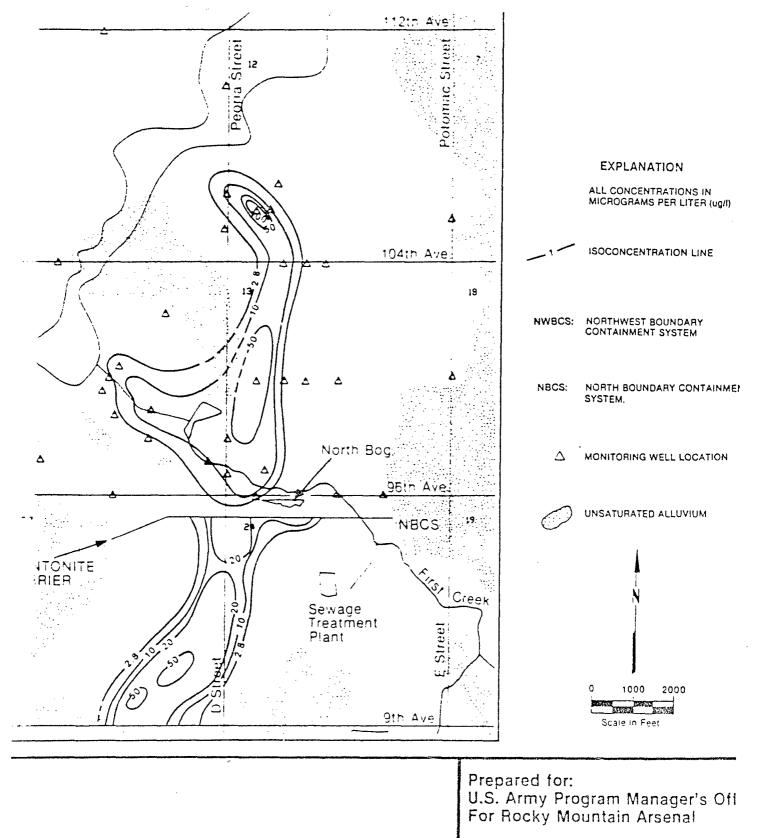
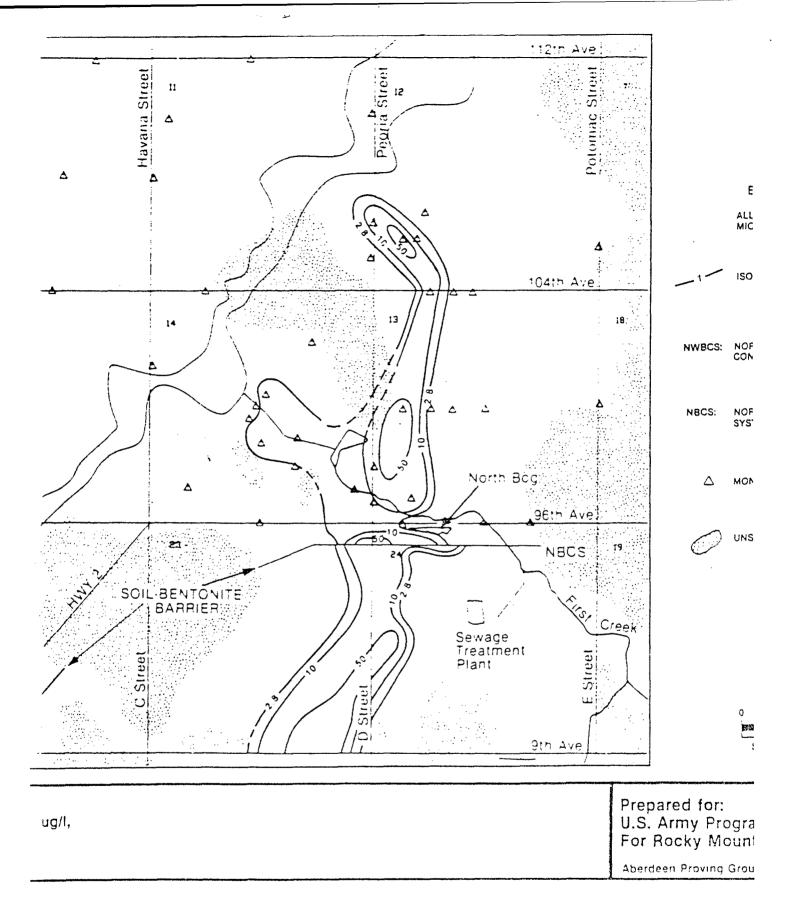
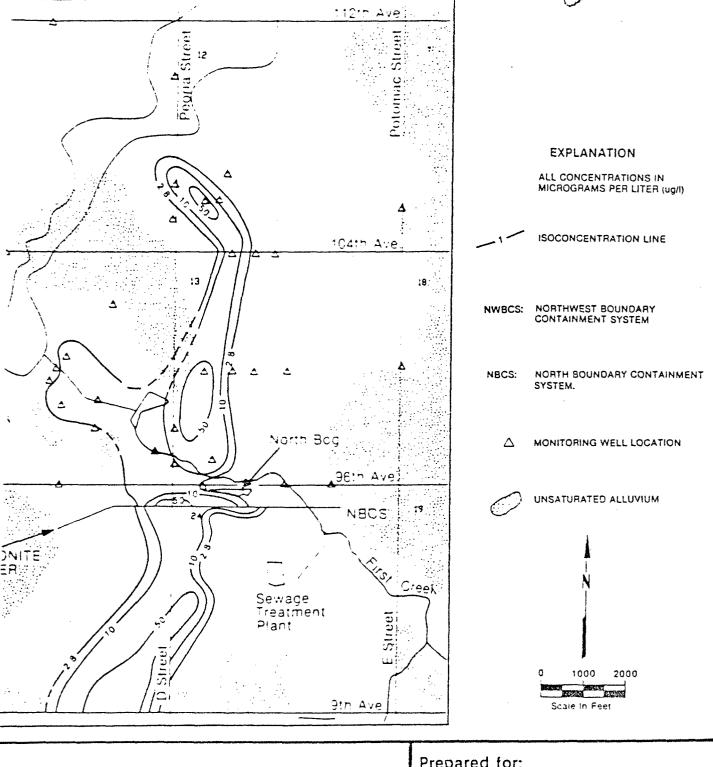


Figure F-26
TETRACHLOROETHENE CONCENTRATION DISTRIBUTION, ug/l, 4TH QUARTER, FY87, ALLUVIAL AQUIFER

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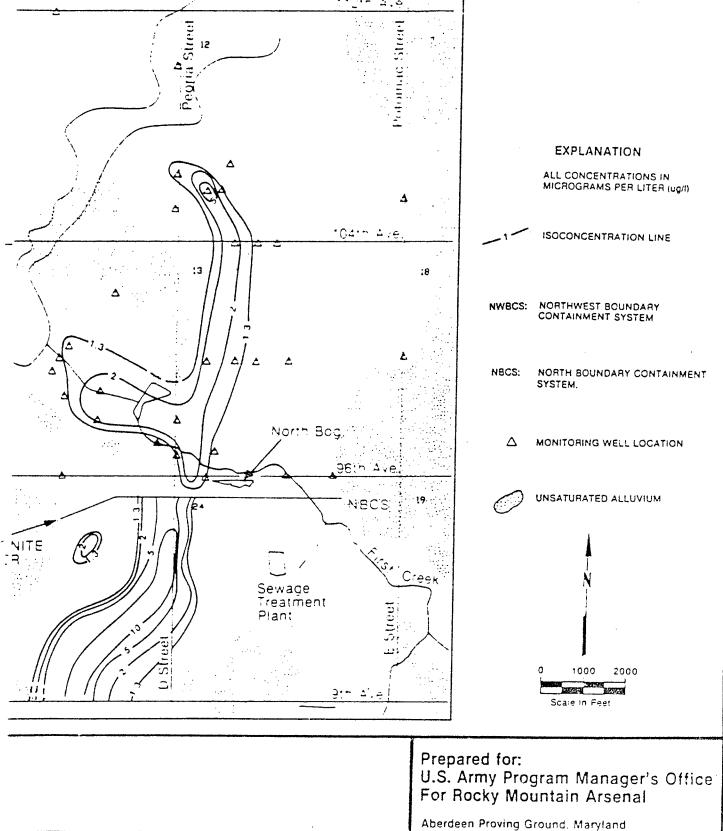


Prepared for: U.S. Army Program Manager's Office For Rocky Mountain Arsenal

Figure F-27
TRICHLOROETHENE CONCENTRATION DISTRIBUTION, ug/l,
3RD QUARTER, FY87, ALLUVIAL AQUIFER

SOUPCE ESE, 1988

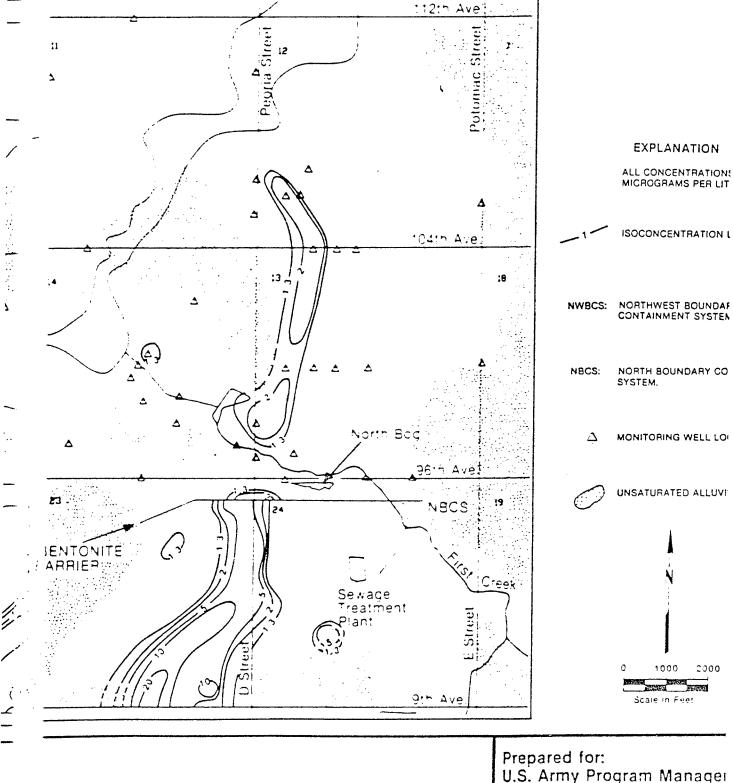
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Figure F-28
TRICHLOROETHENE CONCENTRATION DISTRIBUTION, ug/I,
4TH QUARTER, FY87, ALLUVIAL AQUIFER

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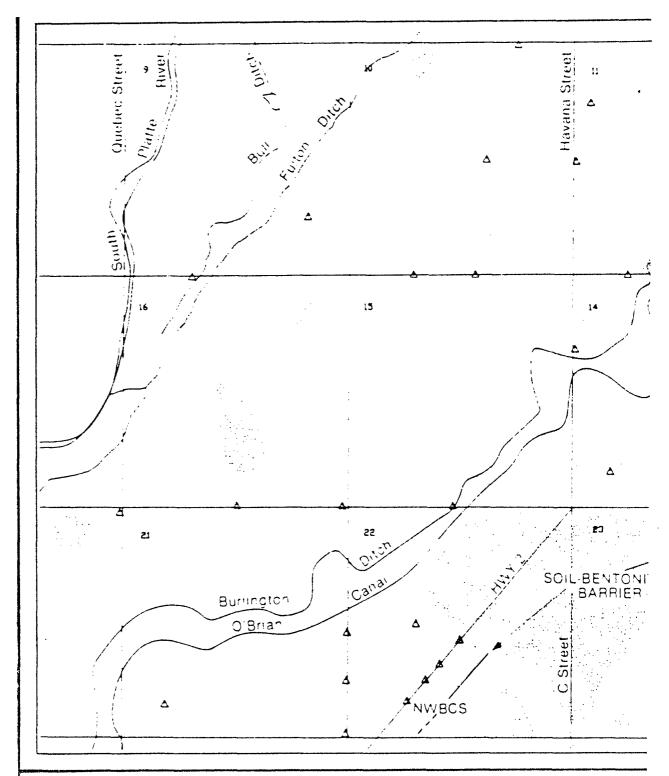
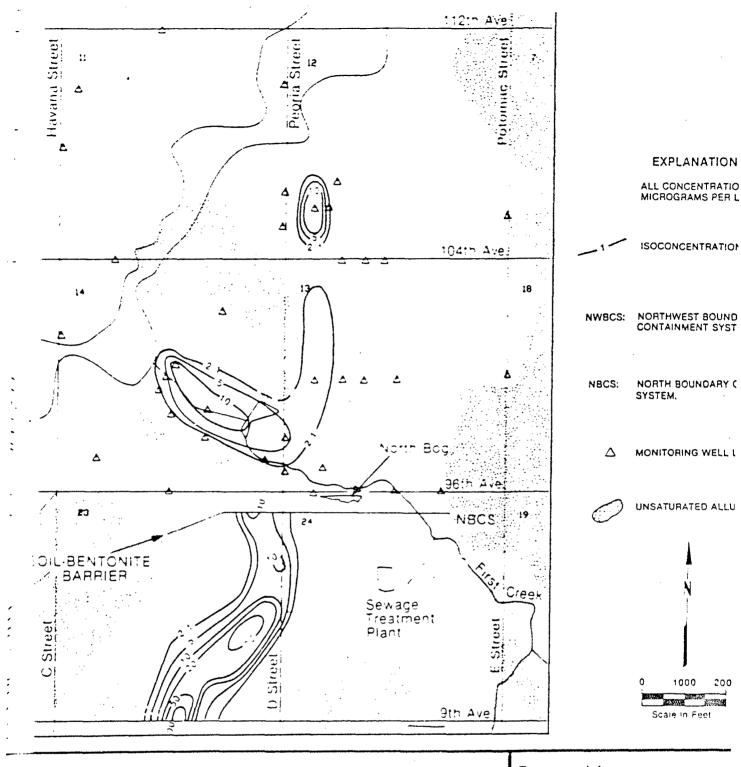


Figure F-29
1.2 DICHLOROETHANE CONCENTRATION DISTRIBUTION, ug/l, 3RD QUARTER, FY87, ALLUVIAL AQUIFER

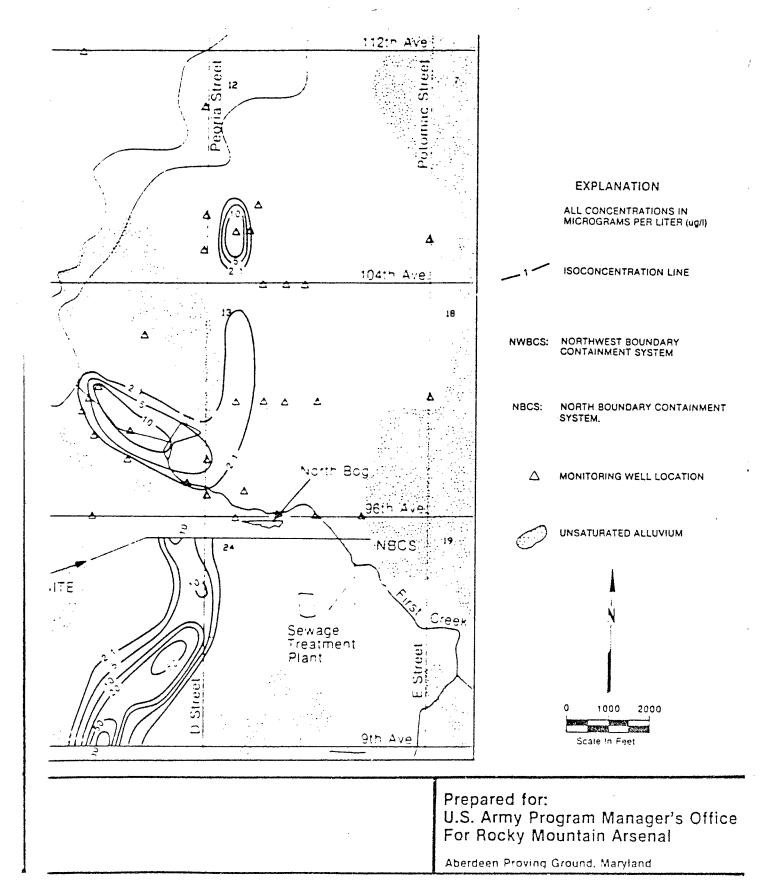
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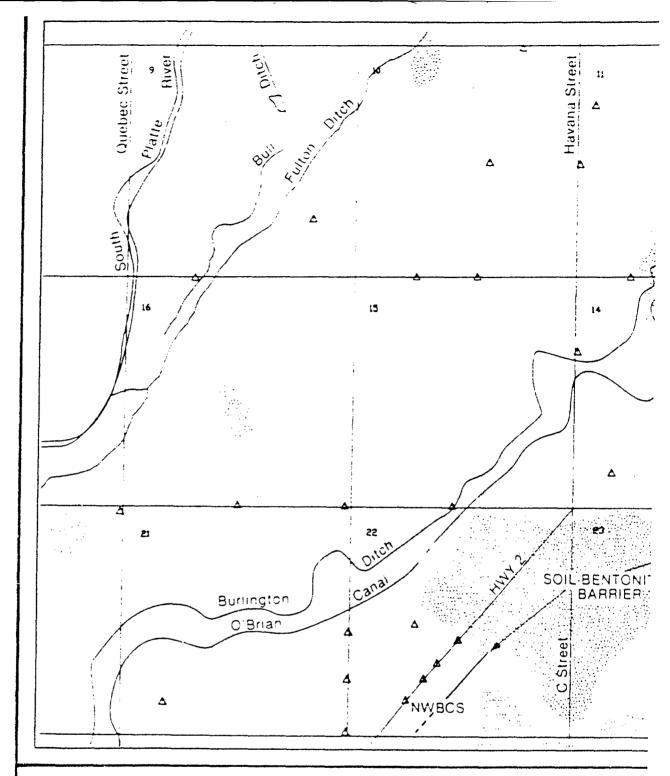
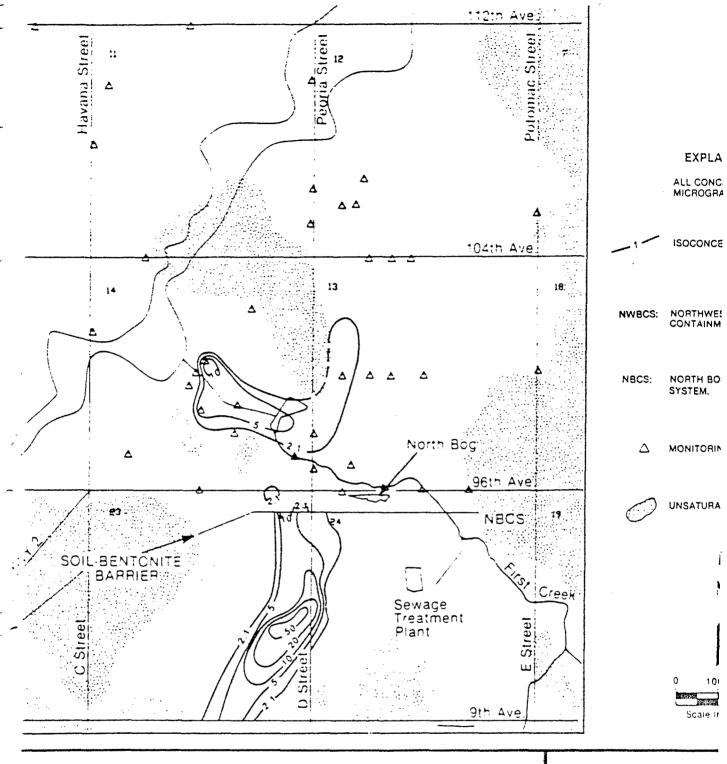


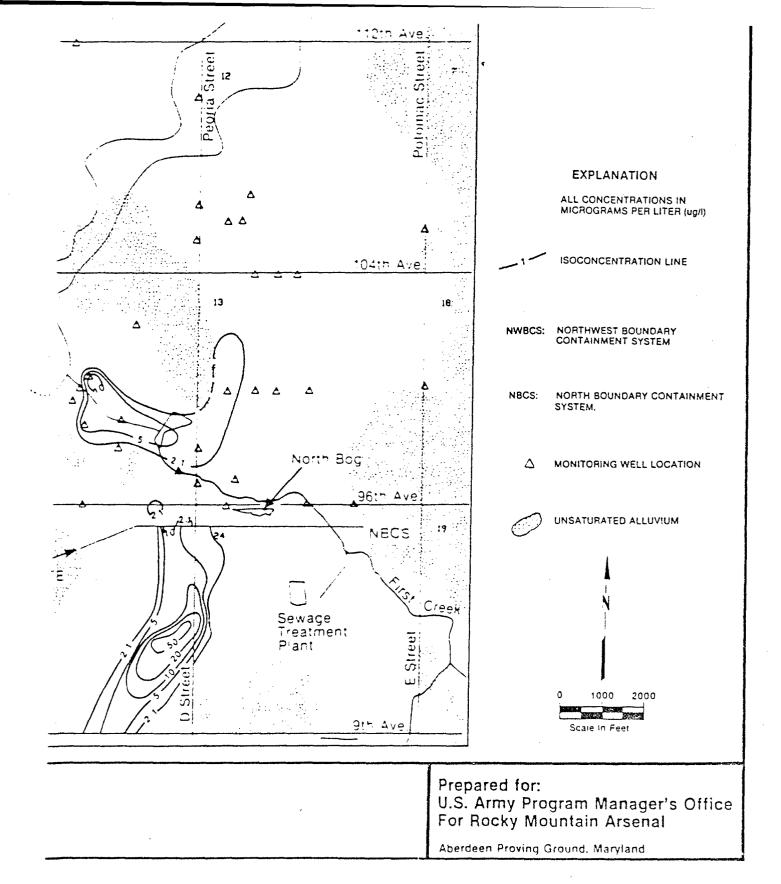
Figure F-30
1.2 DICHLOROETHANE CONCENTRATION DISTRIBUTION, ug/I,
4TH QUARTER, FY87, ALLUVIAL AQUIFER

SOUPCELESE 1988



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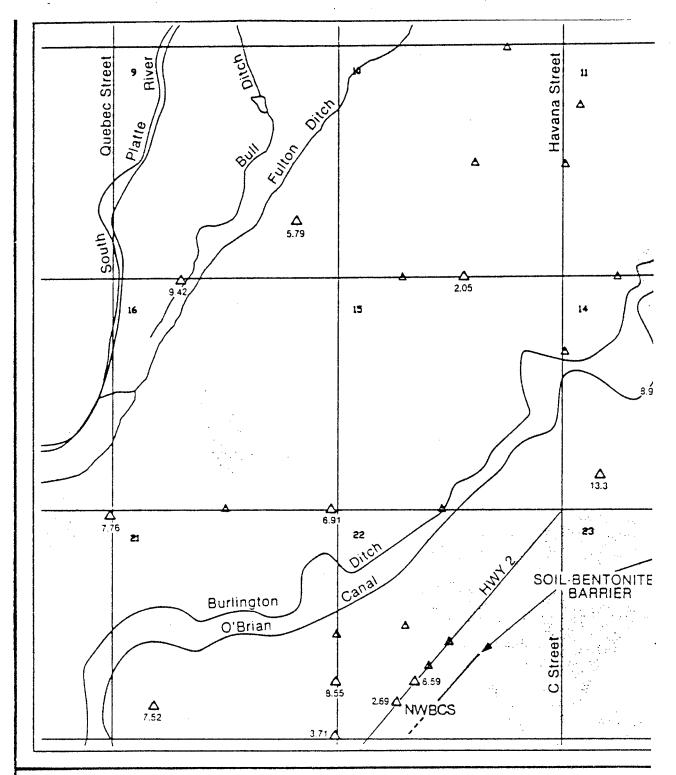
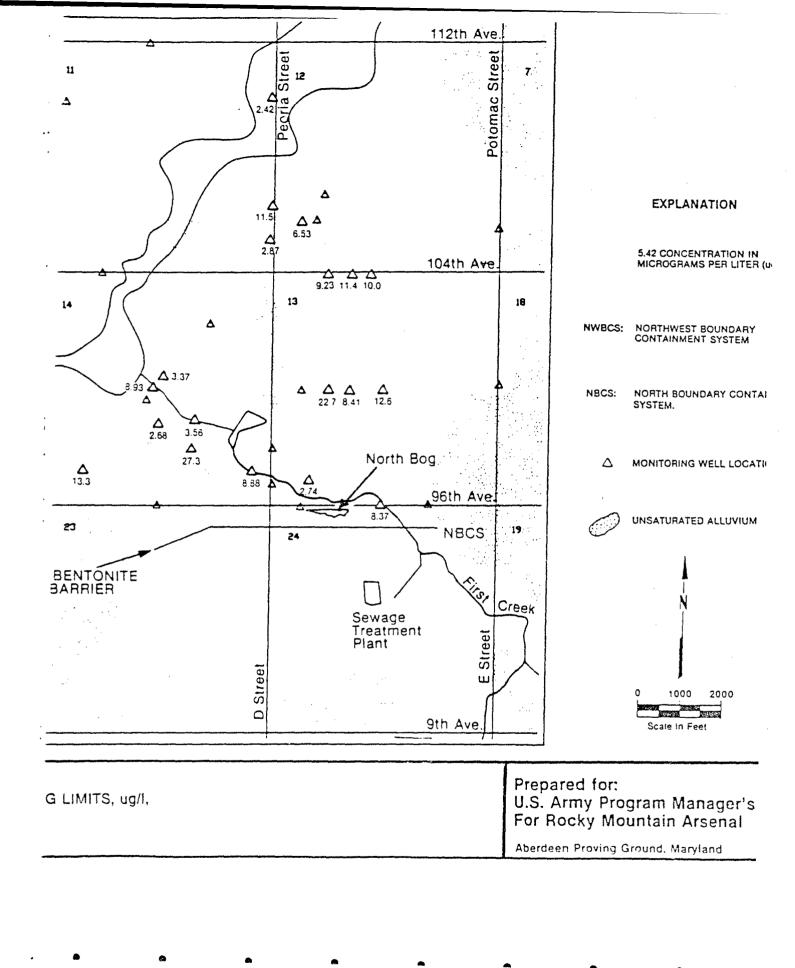
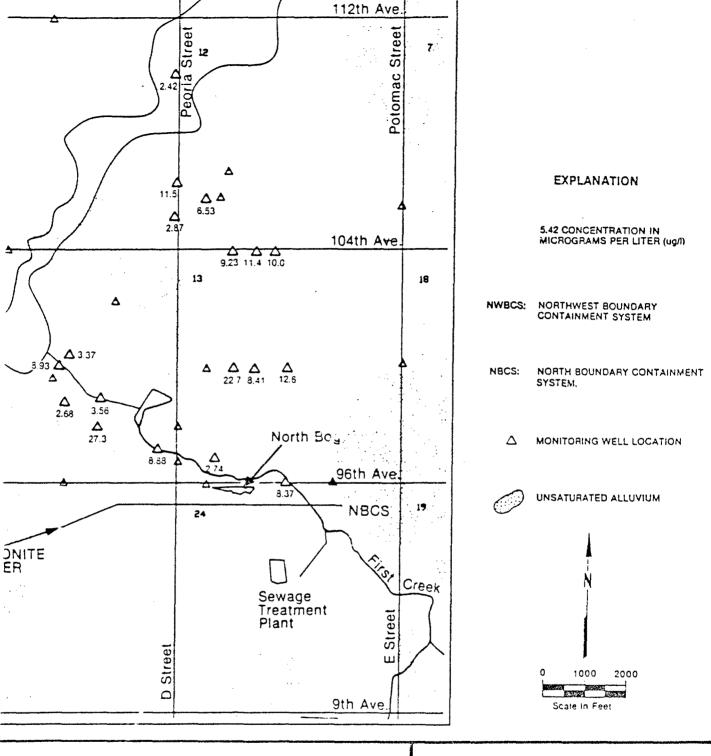


Figure F-31 CHLOROBENZENE CONCENTRATIONS EXCEEDING CERTIFIED REPORTING LIMITS, ut 3RD QUARTER, FY87, ALLUVIAL AQUIFER

SOURCE.ESE,1988



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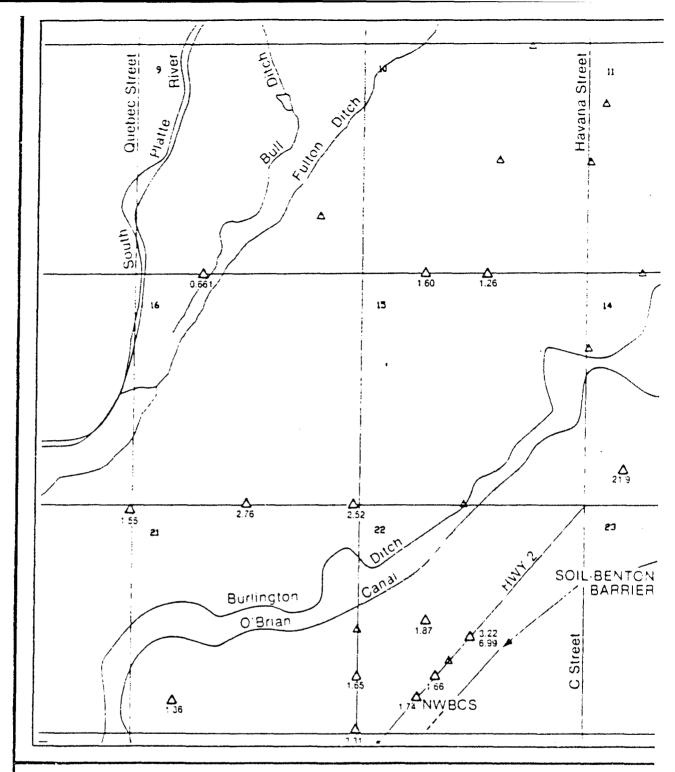
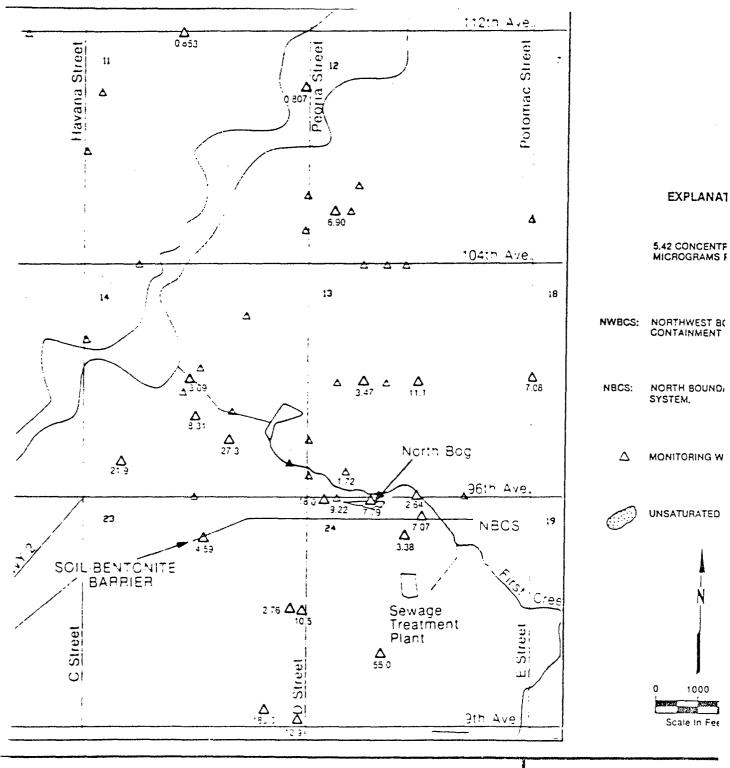


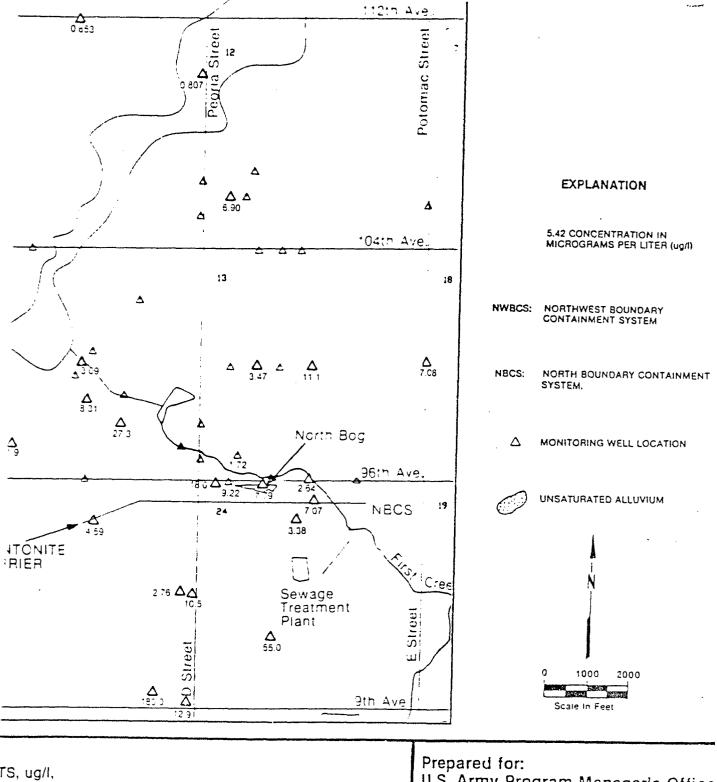
Figure F-32 CHLOROBENZENE CONCENTRATIONS EXCEEDING CERTIFIED REPORTING LIMITS, ug 4TH QUARTER, FY 87, ALLUVIAL AQUIFER

SOURCE, ESE, 1988



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Prepared for: U.S. Army Program Mar For Rocky Mountain Ar



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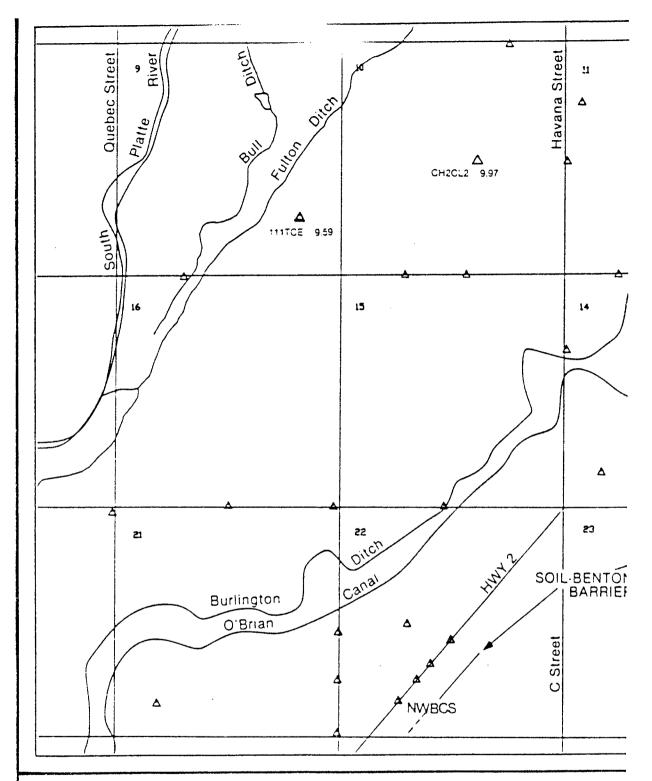
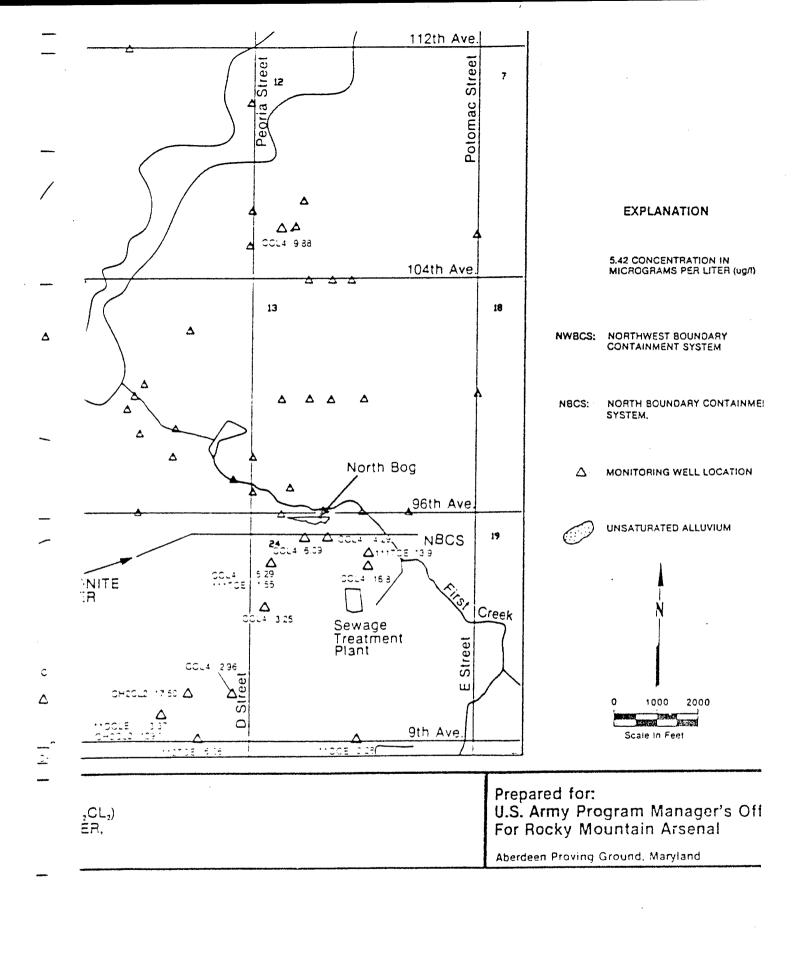


Figure F-33
VOLATILE ORGANOHALOGENS (CCL., 12DCE. 11DCE. 11DCLE. 111TCE, 12TCE. CH., CONCENTRATIONS EXCEEDING CERTIFIED REPORTING LIMITS, ug/l, 3RD QUARTE FY87 ALLUVIAL AQUIFER
SOURCE.ESE.1983



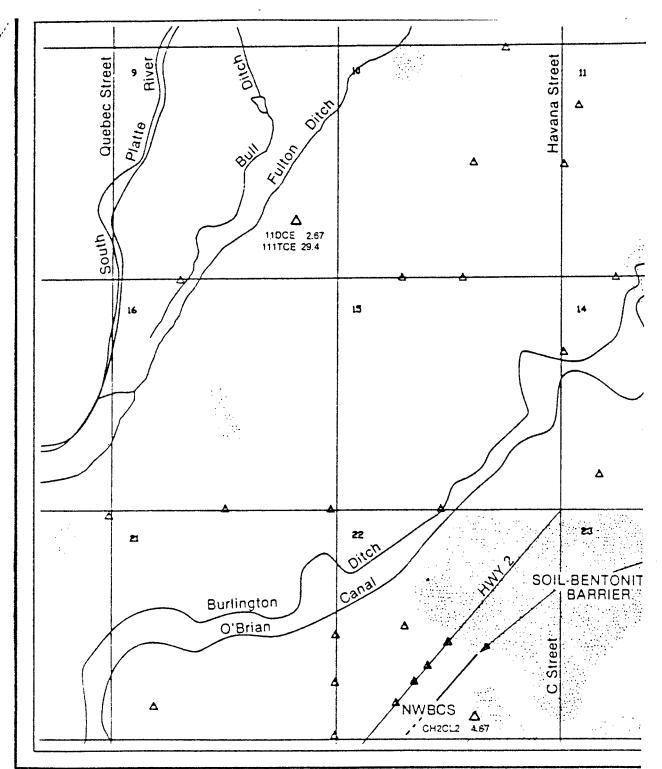
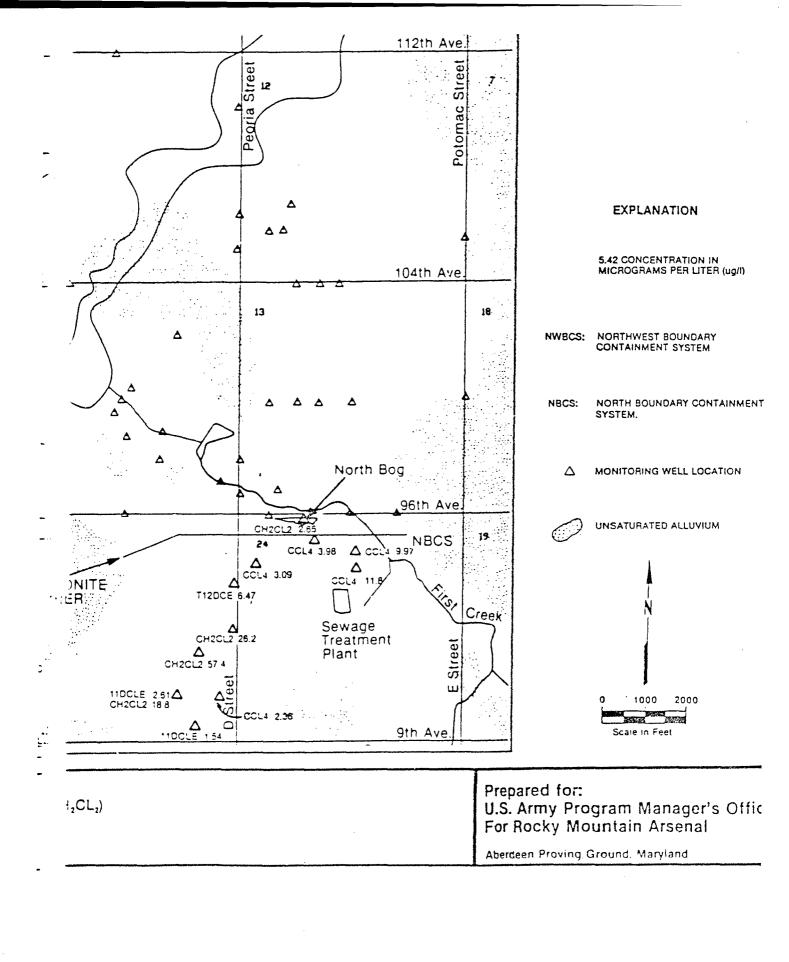


Figure F-34
VOLATILE ORGANOHALOGENS (CCL., 12DCE, 11DCE, 11DCLE, 111TCE, 12TCE, CH₂CL
EXCEEDING CERTIFIED REPORTING LIMITS, ug/I, 4TH QUARTER, FY87,
ALLUVIAL AQUIFER
SOURCE: ESE, 1988



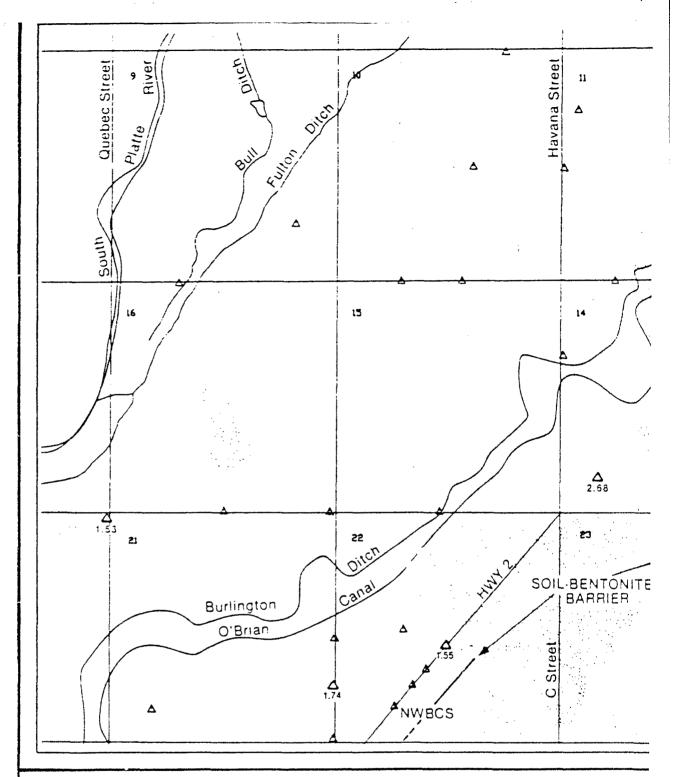
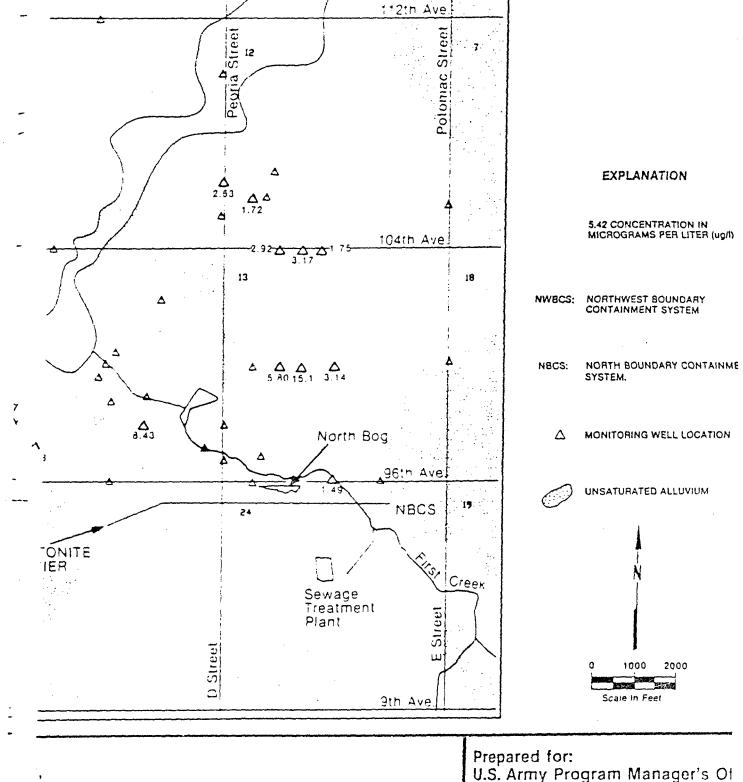


Figure F-35
BENZENE CONCENTRATIONS EXCEEDING CERTIFIED REPORTING LIMITS, ug/l, 3RD QUARTER, FY 87, ALLUVIAL AQUIFER

SOURCE:ESE:1988



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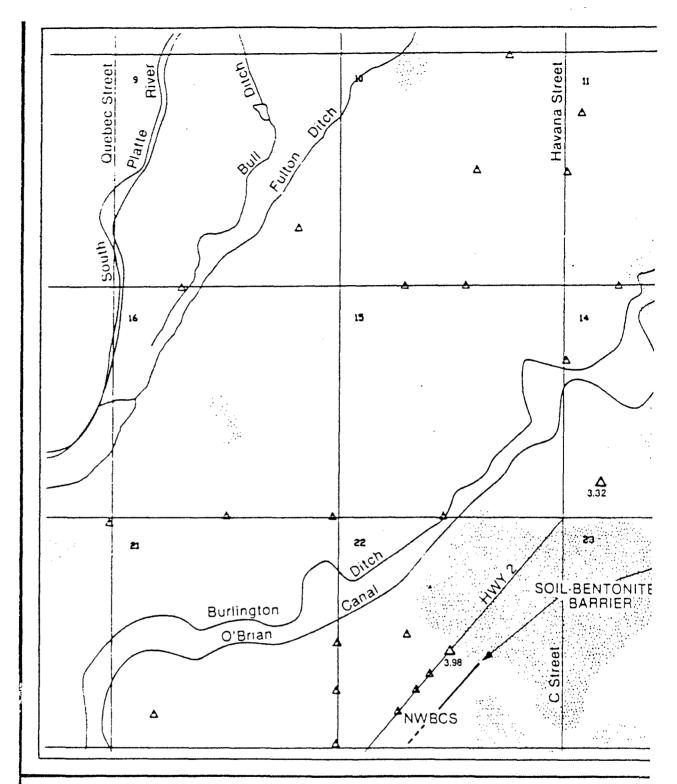
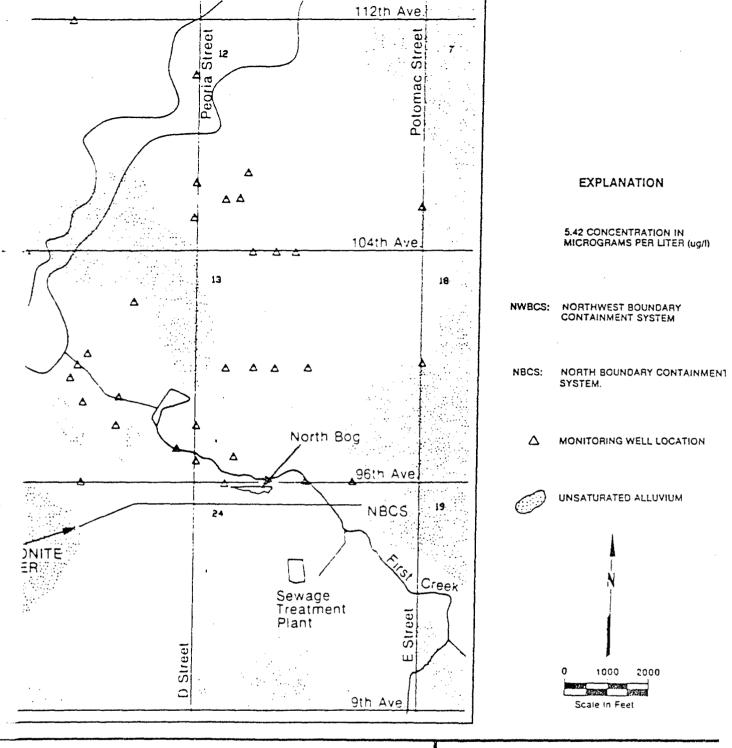


Figure F-36 BENZENE CONCENTRATIONS EXCEEDING CERTIFIED REPORTING LIMITS, ug/l, 4TH QUARTER, FY87. ALLUVIAL AQUIFER

SOURCE.ESE, 1988



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Aberdeen Proving Ground, Maryland

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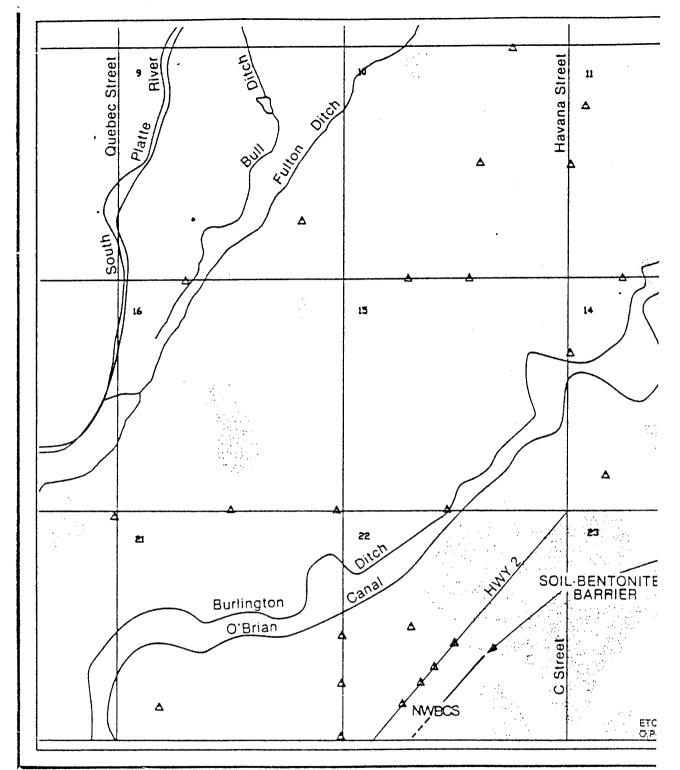
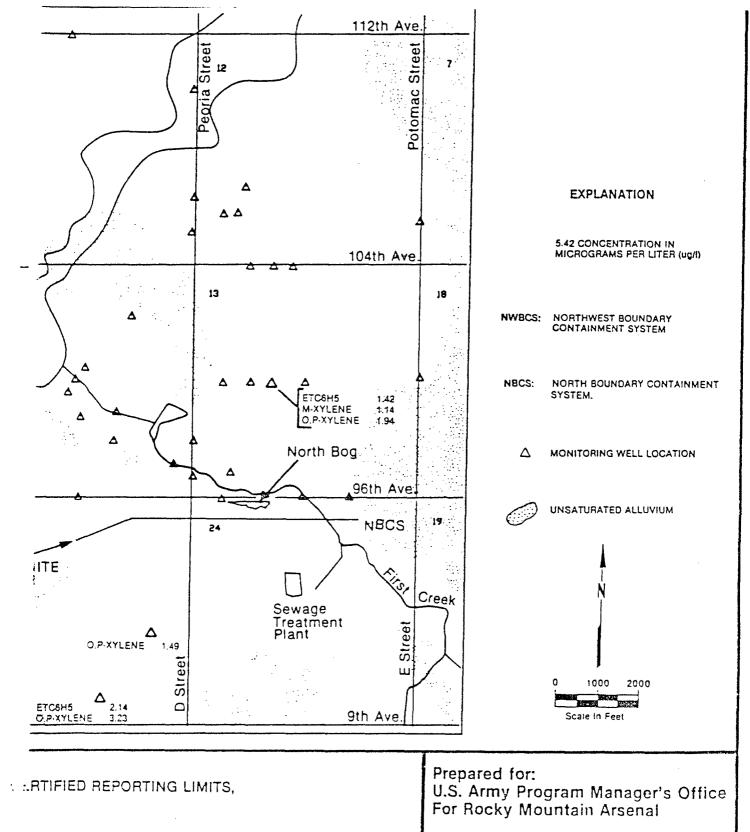


Figure F-37

VOLATILE AROMATICS (ETHYLBENZENE, M-XYLENE, O,P-XYLENE) EXCEEDING CERTI
ug/l, 3RD QUARTER, FY87, ALLUVIAL AQUIFER

SOURCE: ESE, 1988



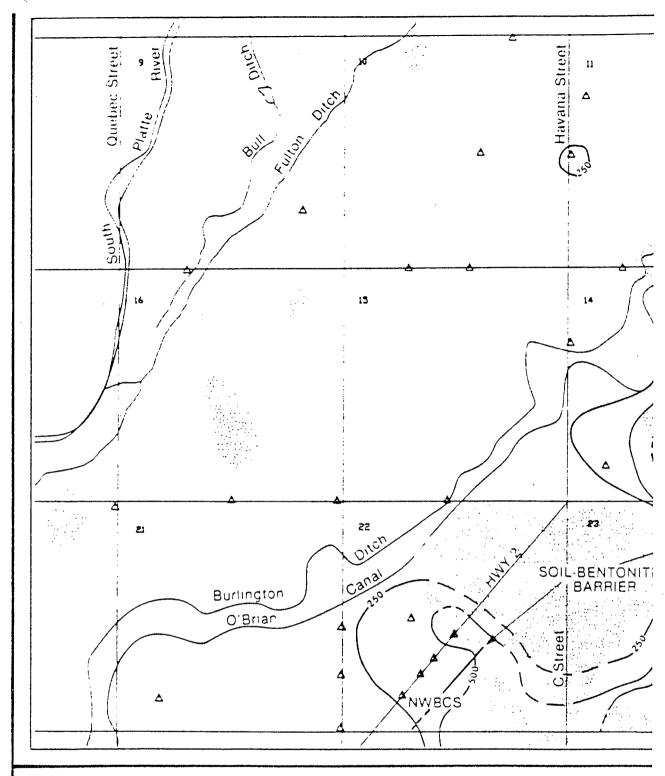
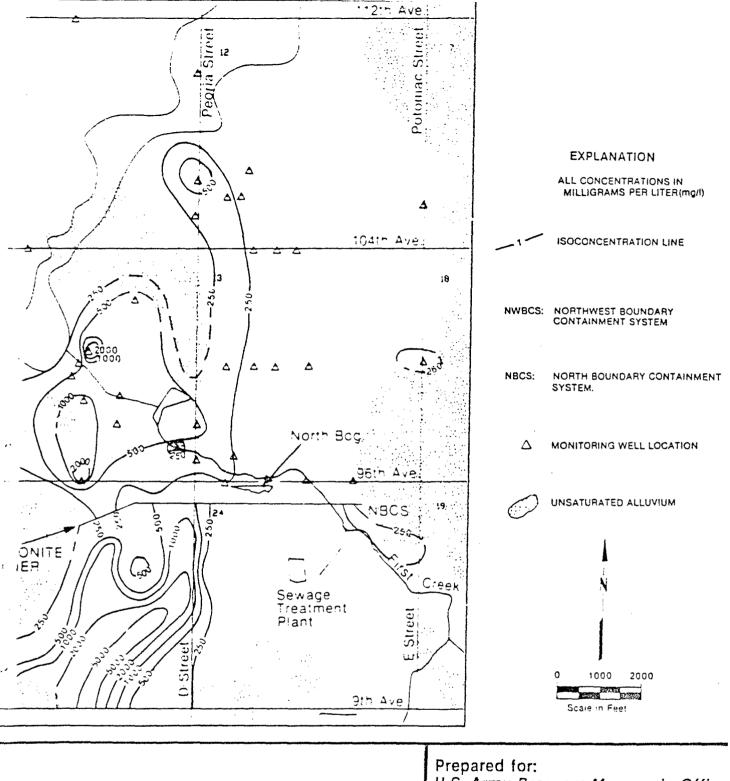


Figure F-38 CHLORIDE CONCENTRATION DISTRIBUTION, mg/l, 3RD QUARTER, FY87, ALLUVIAL AQUIFER

SOURCE.ESE.1988

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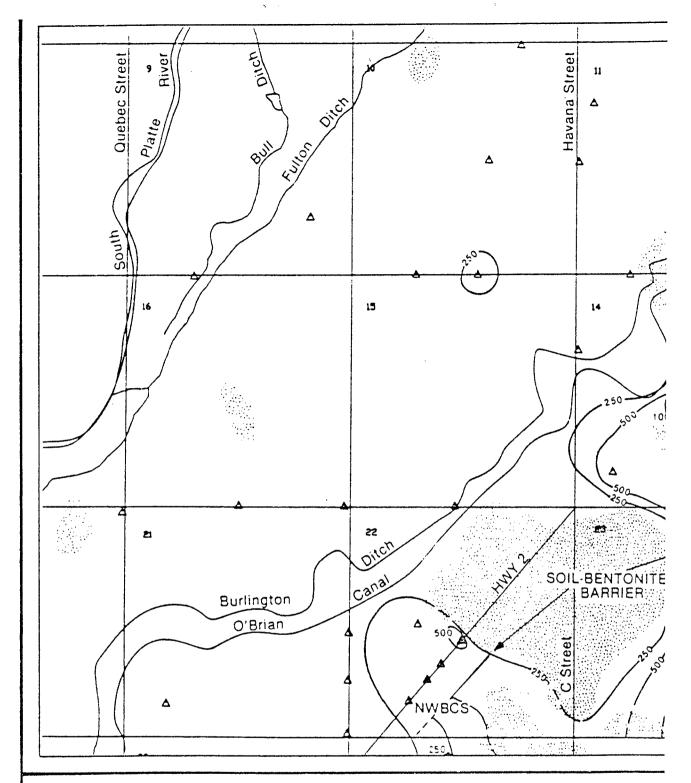
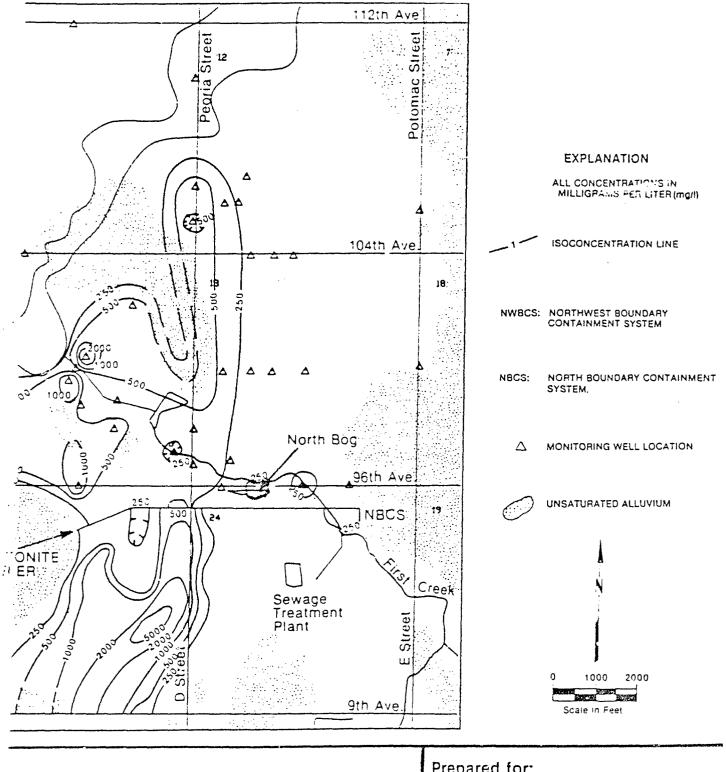


Figure F-39 CHLORIDE CONCENTRATION DISTRIBUTION, mg/l, 4TH QUARTER, FY87, ALLUVIAL AQUIFER

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U.S. Army Program Manager's Office
For Rocky Mountain Arsenal

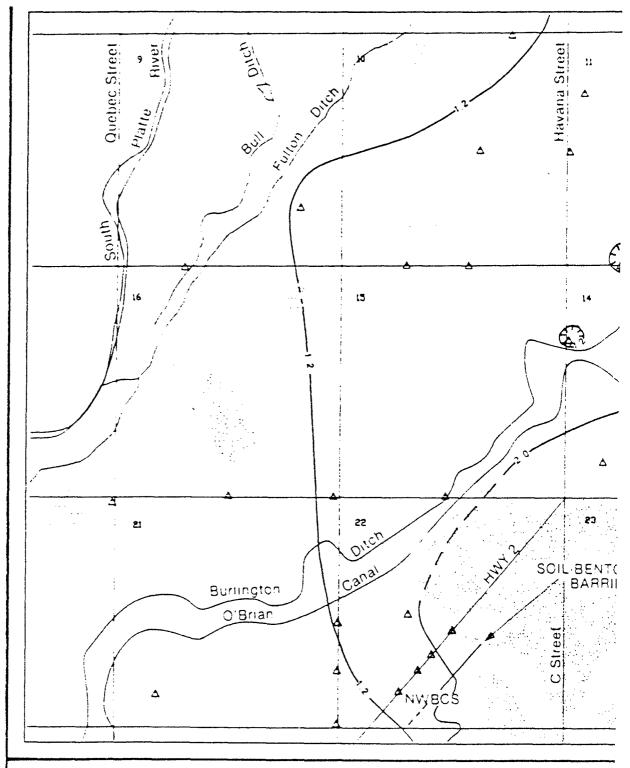


Figure F-4'0
FLUORIDE CONCENTRATION DISTRIBUTION, mg/l,
3RD QUARTER. FY87, ALLUVIAL AQUIFER

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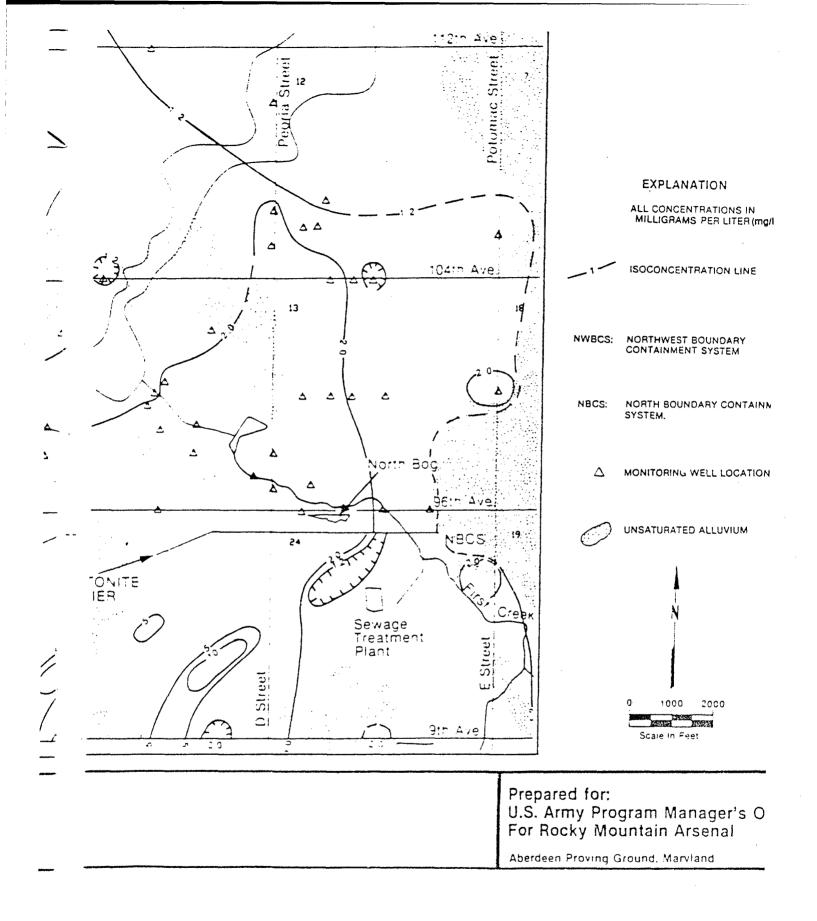
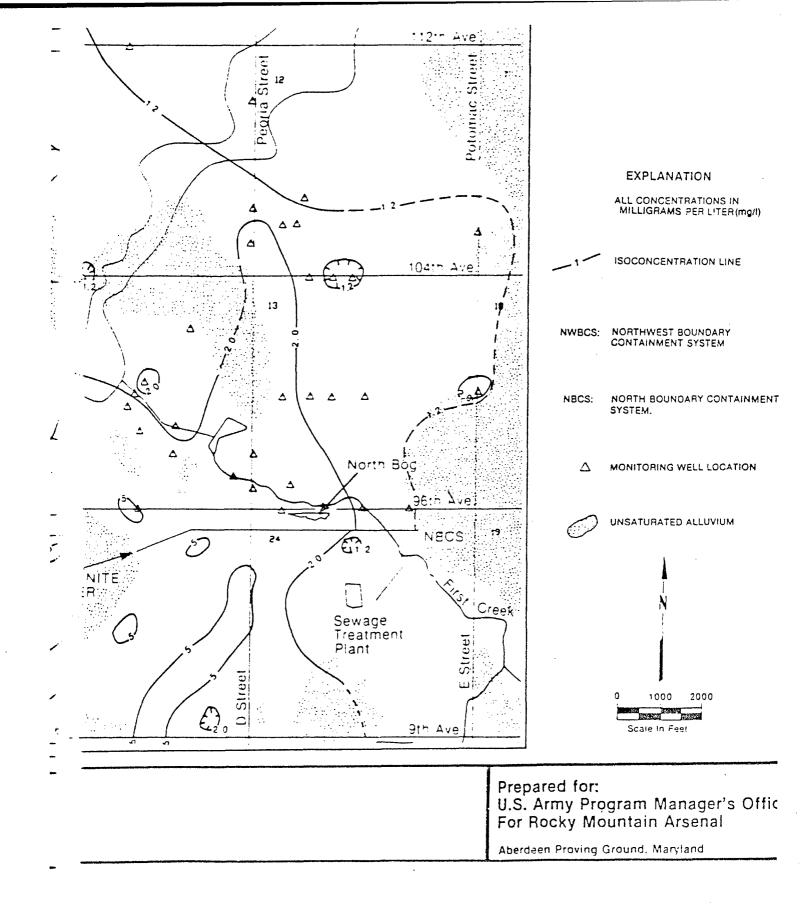


Figure F-41
FLUORIDE CONCENTRATION DISTRIBUTION, mg/l,
4TH QUARTER, FY87, ALLUVIAL AQUIFER

SOURCE.ESE,1988



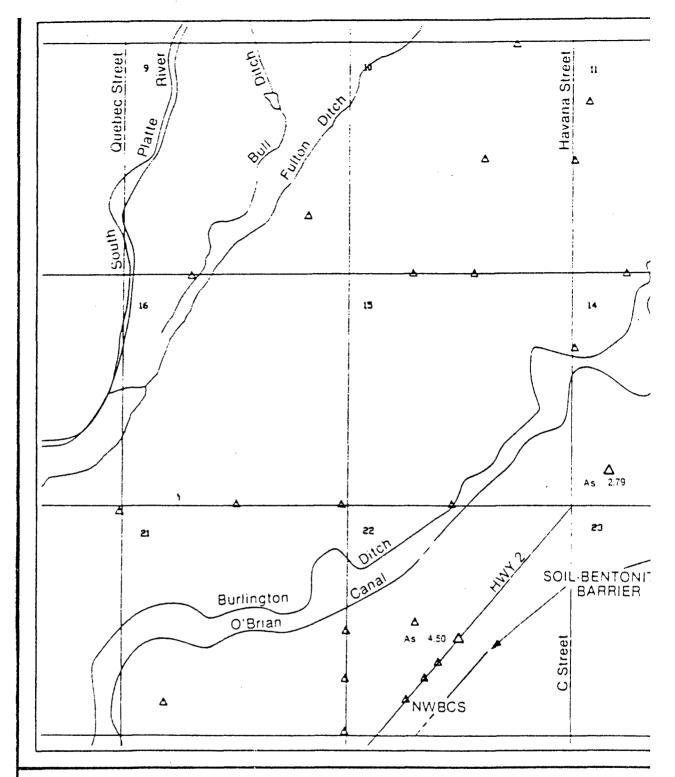
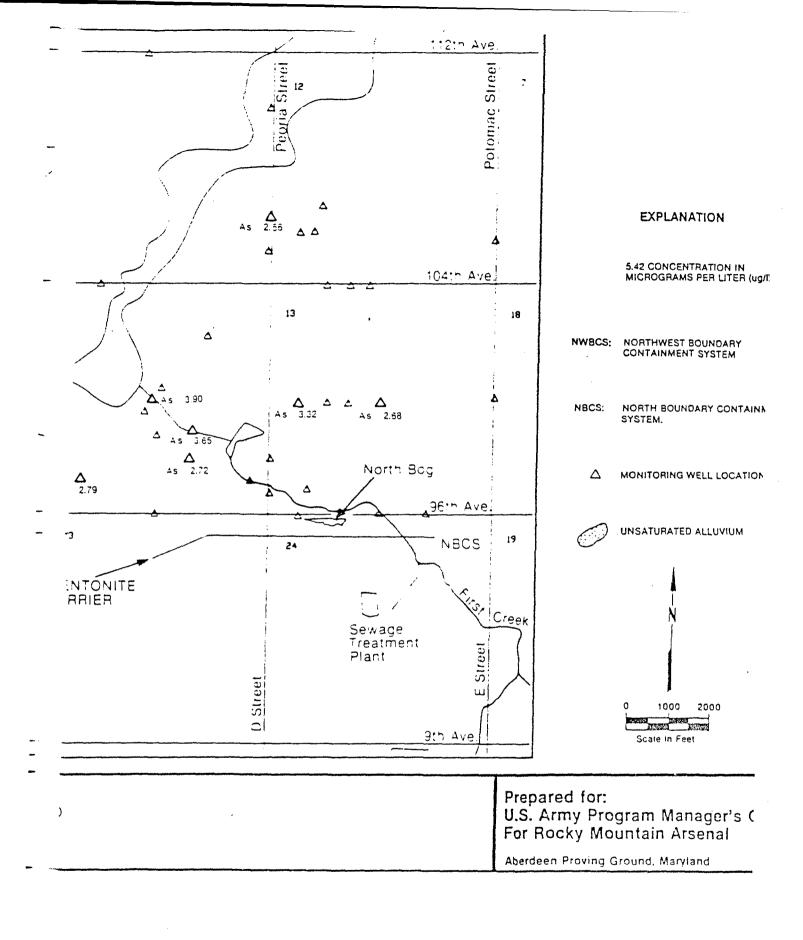


Figure F-42 ARSENIC (As) AND MERCURY (Hg) CONCENTRATIONS EXCEEDING CERTIFIED REPORTING LIMITS, ug/I,3RD QUARTER, FY87, ALLUVIAL AQUIFER

SOURCE.ESE,1988



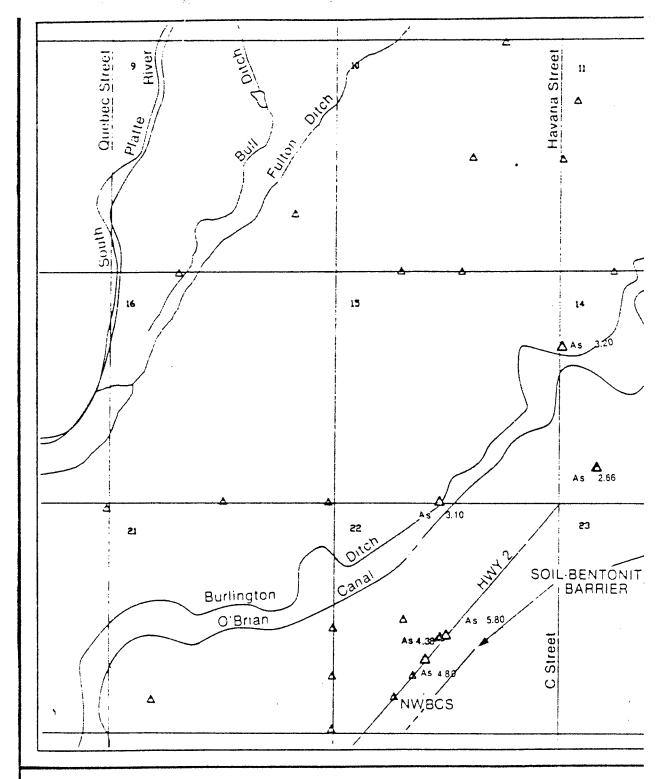
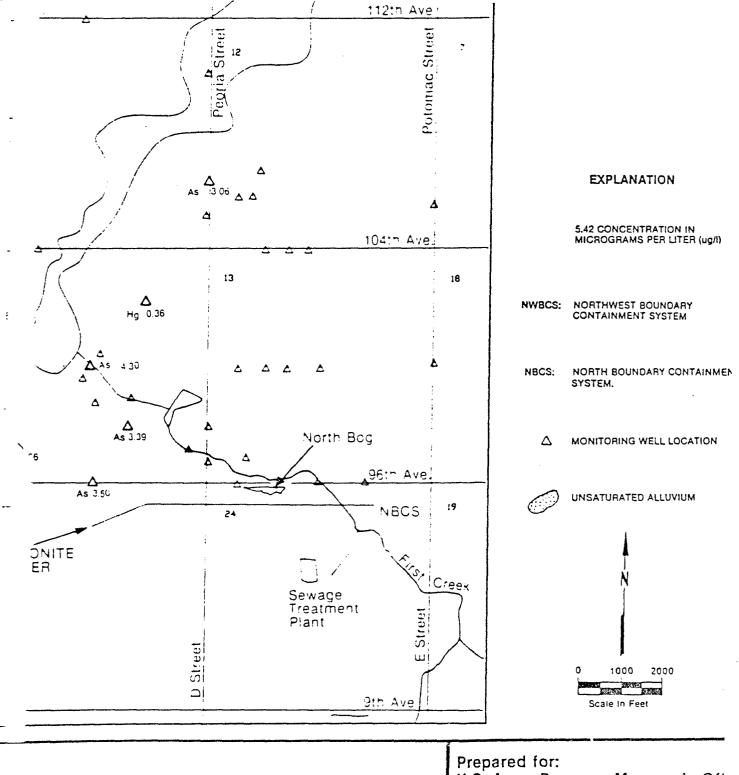


Figure F-43
ARSENIC (As) AND MERCURY (Hg) CONCENTRATIONS EXCEEDING CERTIFIED REPORTING LIMITS, ug/I, 4TH QUARTER, FY87, ALLUVIAL AQUIFER

SOURCE,ESE,1988



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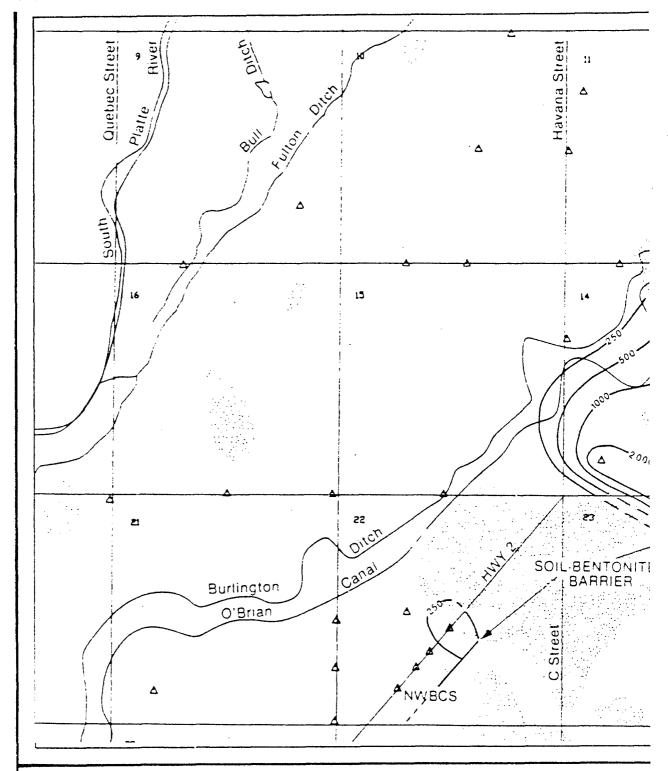
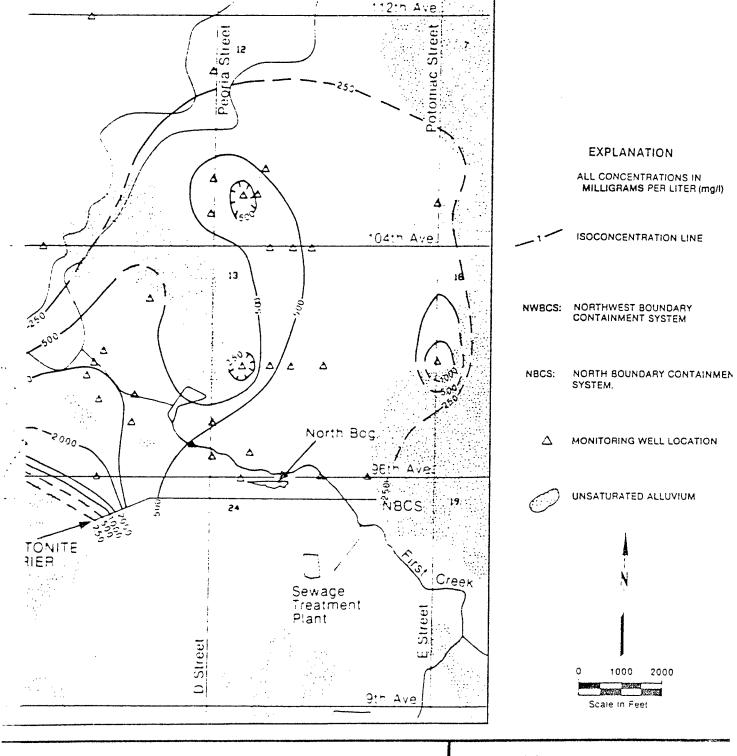


Figure F-44 SULFATE CONCENTRATION DISTRIBUTION, mg/l, 3RD QUARTER, FY87, ALLUVIAL AQUIFER

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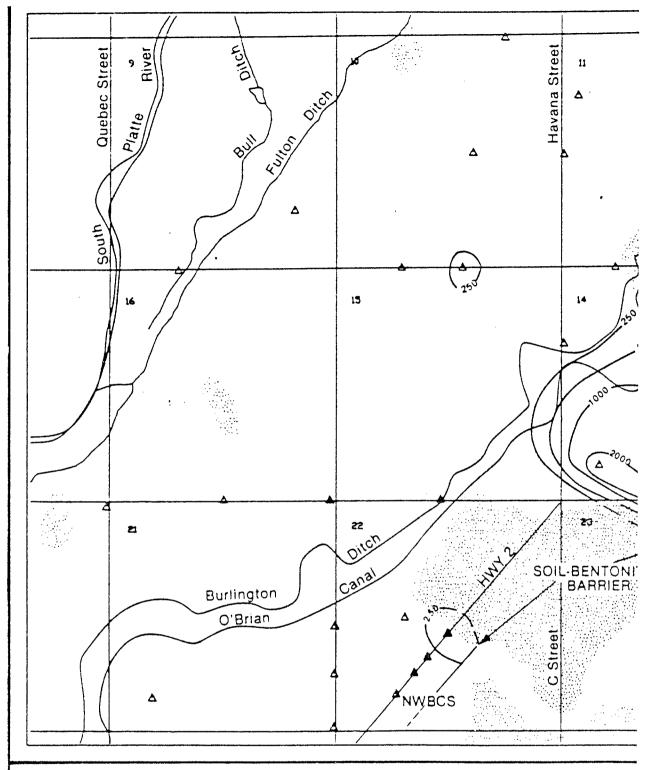
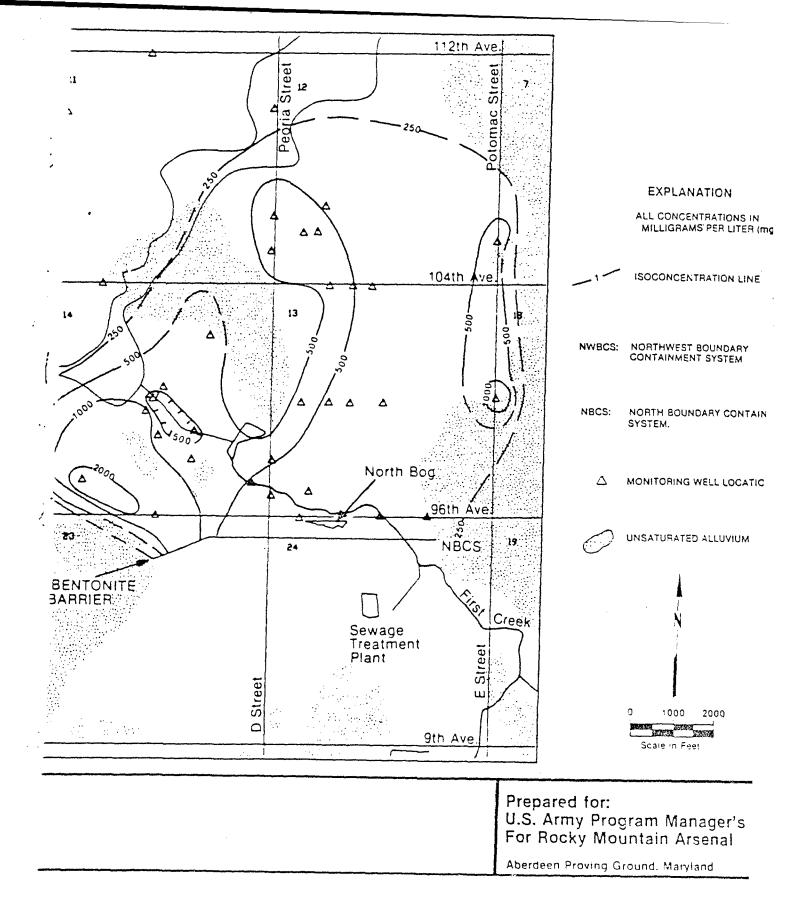


Figure F-45 SULFATE CONCENTRATION DISTRIBUTION, mg/l, 4TH QUARTER, FY87, ALLUVIAL AQUIFER

SOURCE.ESE, 1988



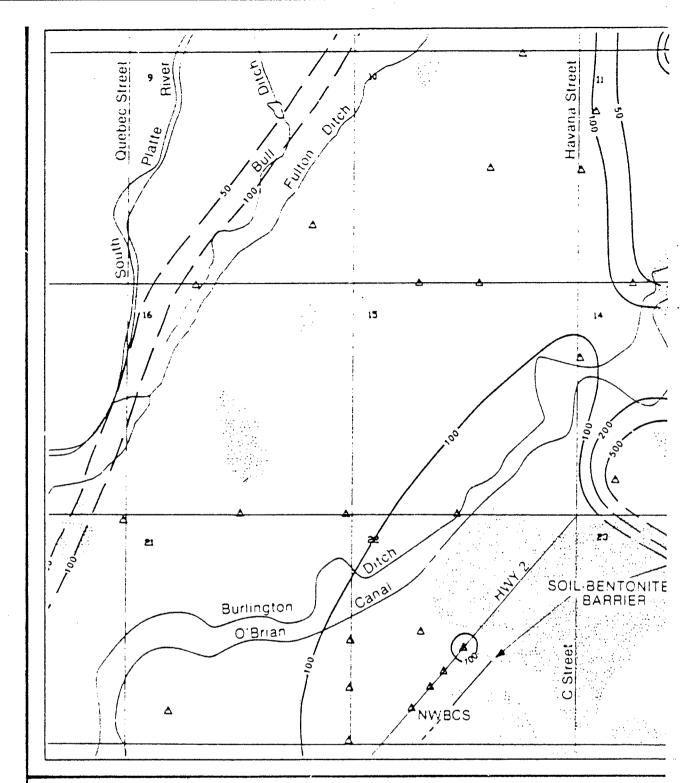
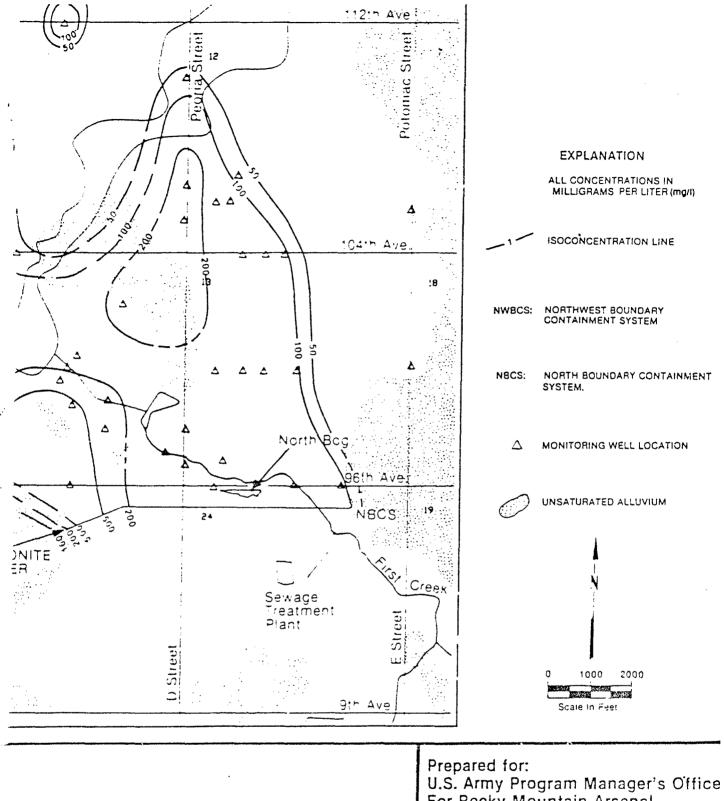


Figure F-46
CALCIUM CONCENTRATION DISTRIBUTION, mg/l,
3RD QUARTER, FY87, ALLUVIAL AQUIFER

SOURCE.ESE, 1988



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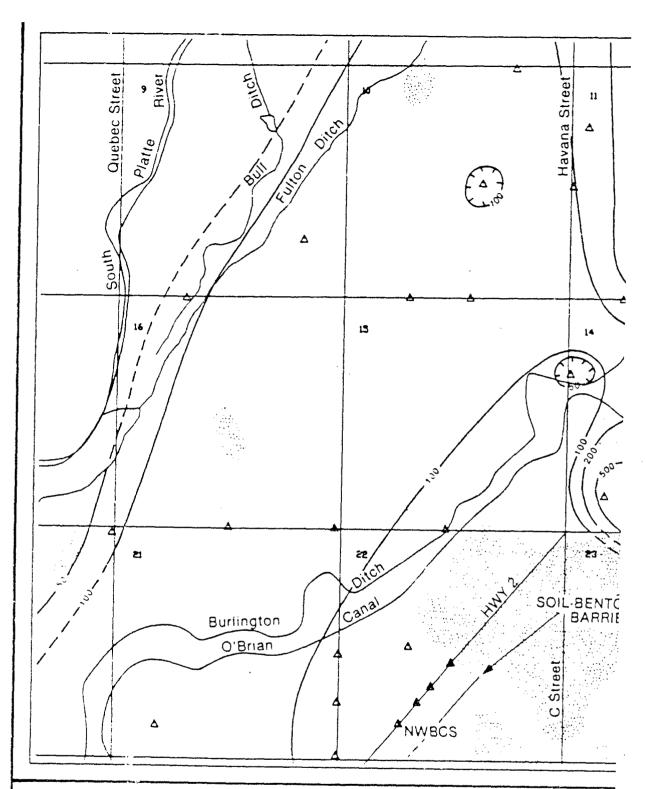
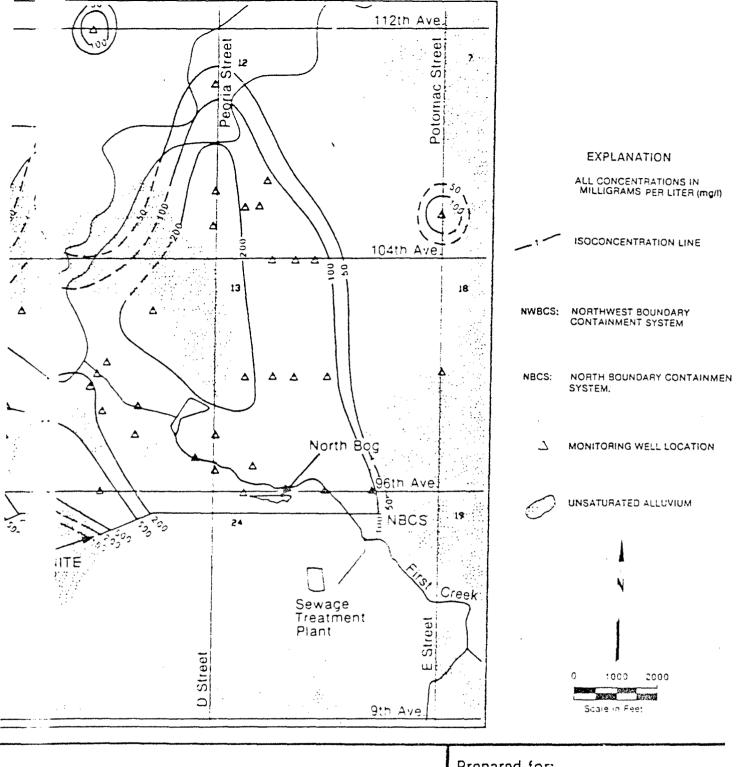


Figure F-47 CALCIUM CONCENTRATION DISTRIBUTION, mg/l, 4TH QUARTER, FY87, ALLUVIAL AQUIFER

SOUPCE ESE 1989



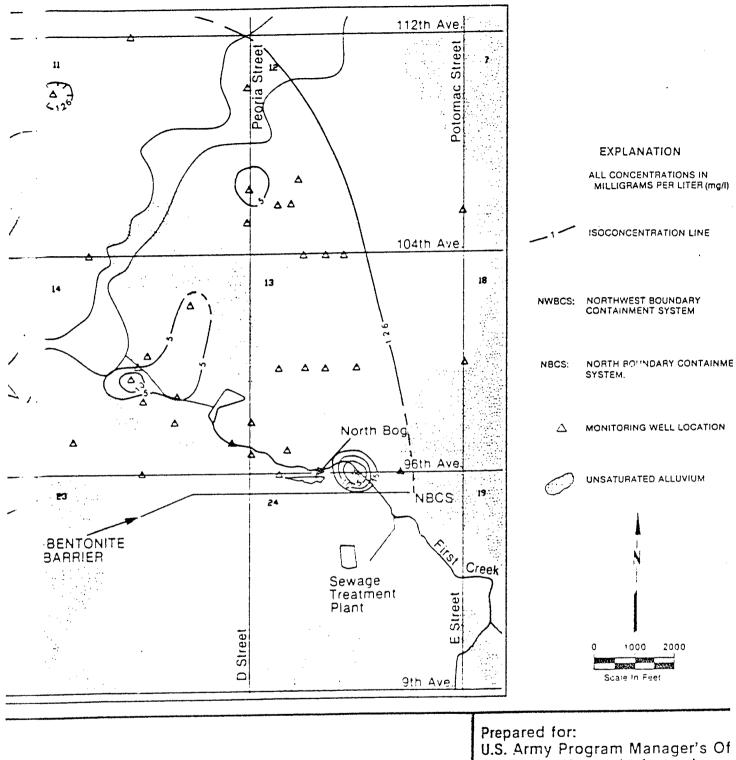
Prepared for: U.S. Army Program Manager's Off For Rocky Mountain Arsenal

Quebec Street Havana Street River South 15 21 SOIL-BE Burlington O'Brian 'NWBCS Δ

Figure F-48
POTASSIUM CONCENTRATION DISTRIBUTION, mg/l,
3RD QUARTER, FY87, ALLUVIAL AQUIFER

COUPCE ESE 1988

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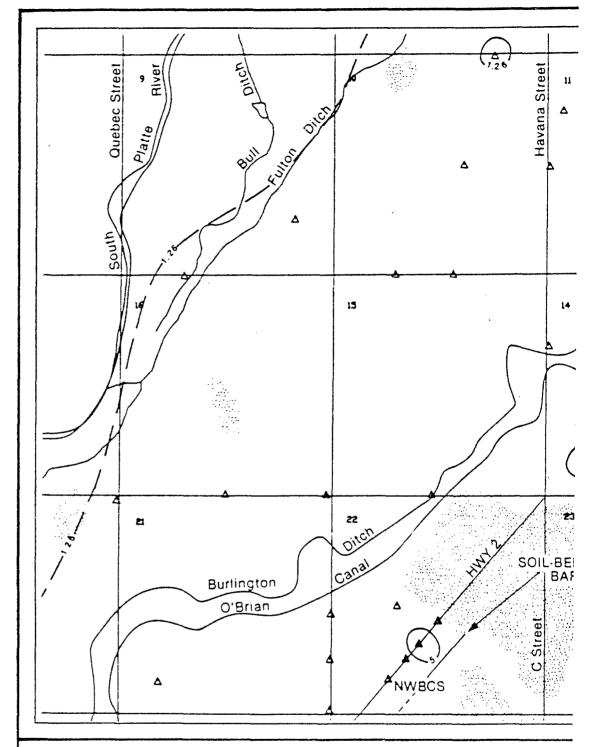
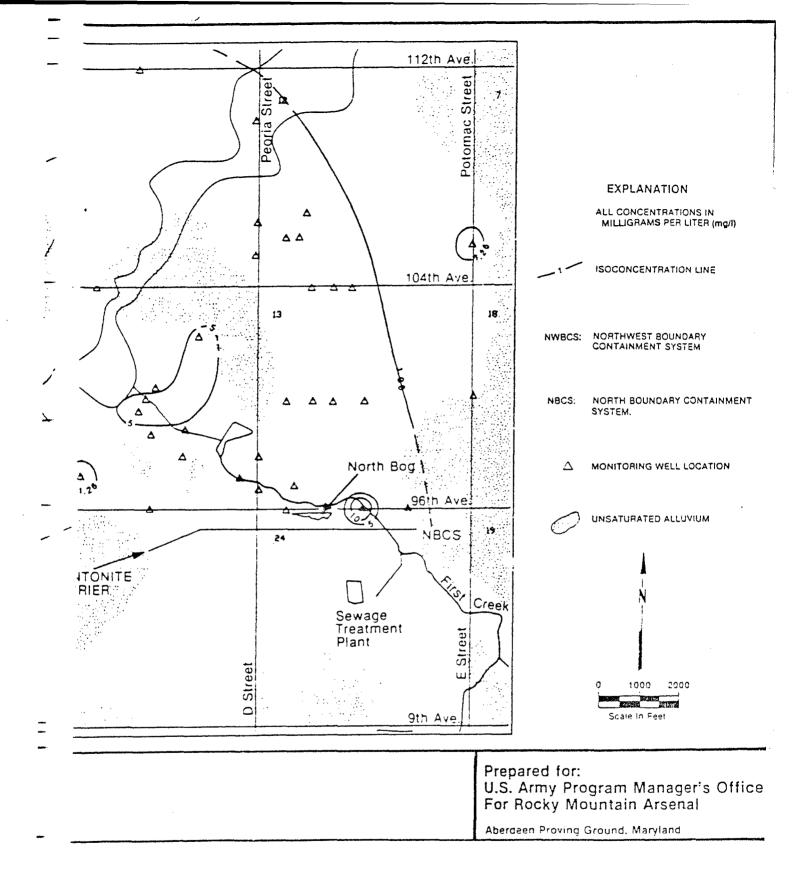


Figure F-49
POTASSIUM CONCENTRATION DISTRIBUTION, mg/l,
4TH QUARTER, FY87. ALLUVIAL AQUIFER

SOUPCELESE, 1989

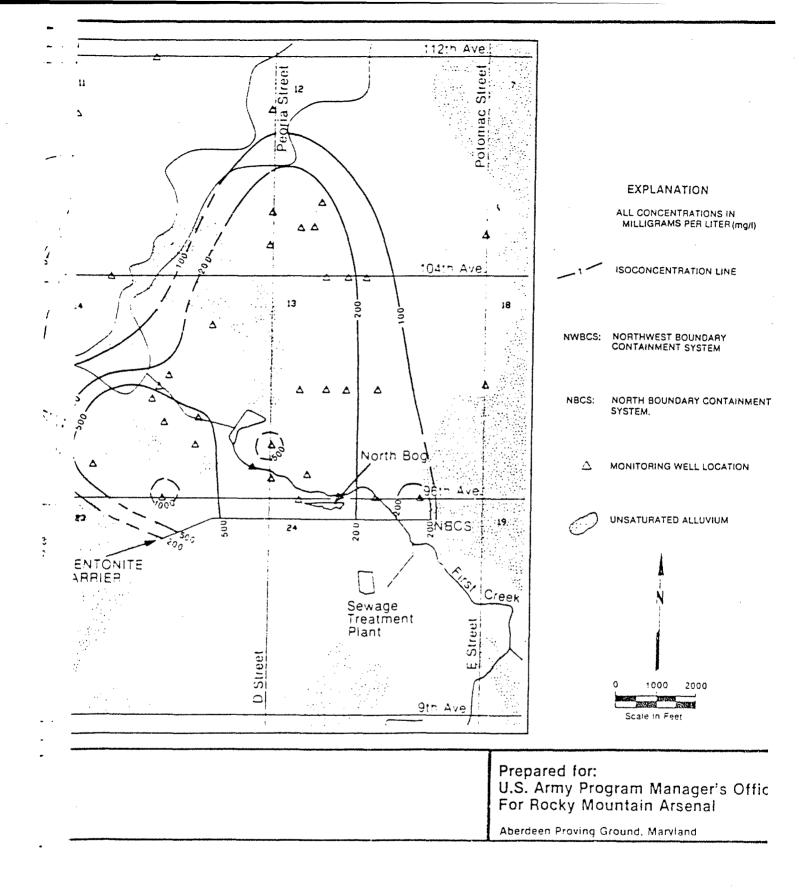


Havana Street Quebec Street Olice South 15 22 21 SOIL BEN Burlington O'Brian NWBCS Δ

Figure F-50 SODIUM CONCENTRATION DISTRIBUTION, mg/l, 3RD QUARTER. FY87, ALLUVIAL AQUIFER

SOURCE.ESE.1988

T. W



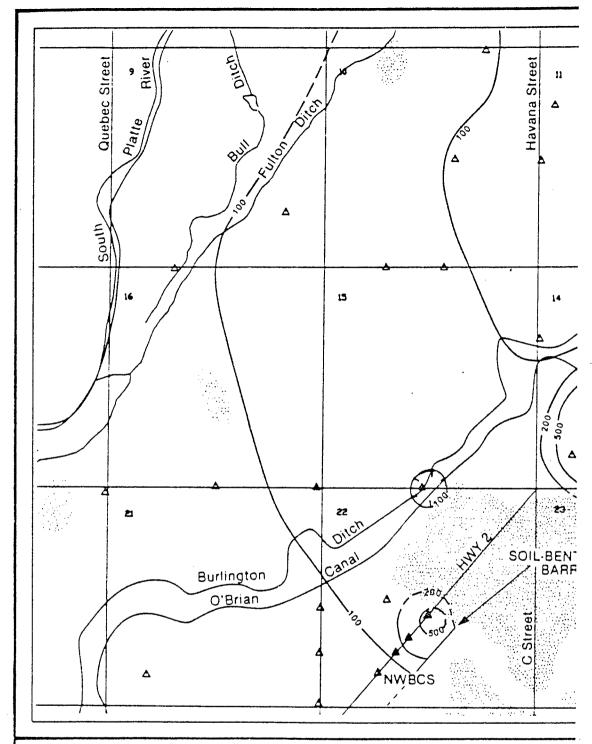
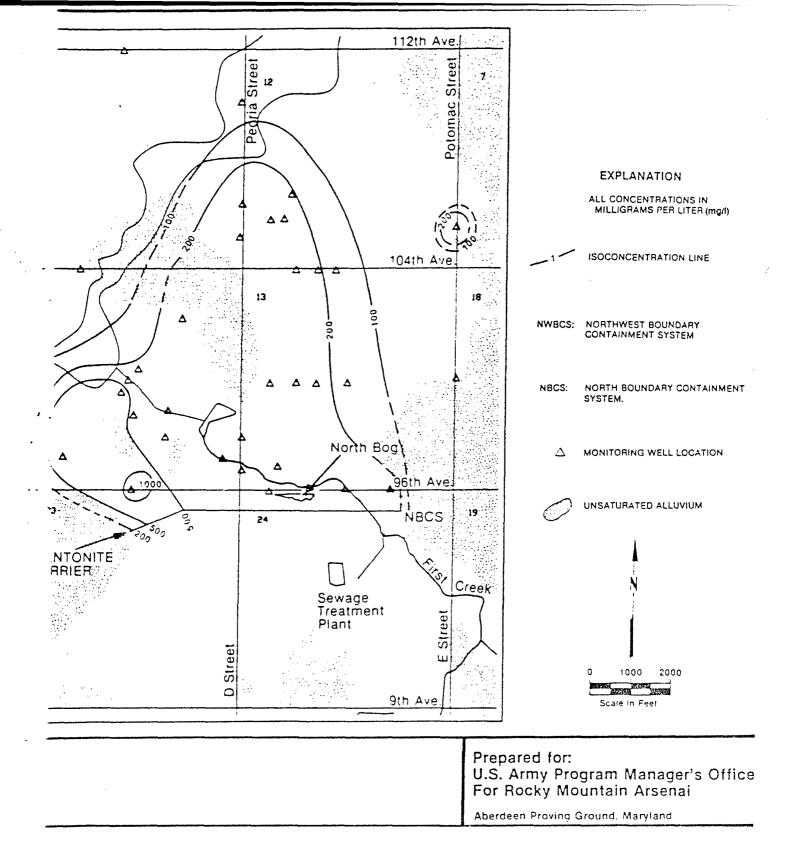


Figure F-51 SODIUM CONCENTRATION DISTRIBUTION, mg/l, 4TH QUARTER, FY87, ALLUVIAL AQUIFER

SOURCE,ESE 1983



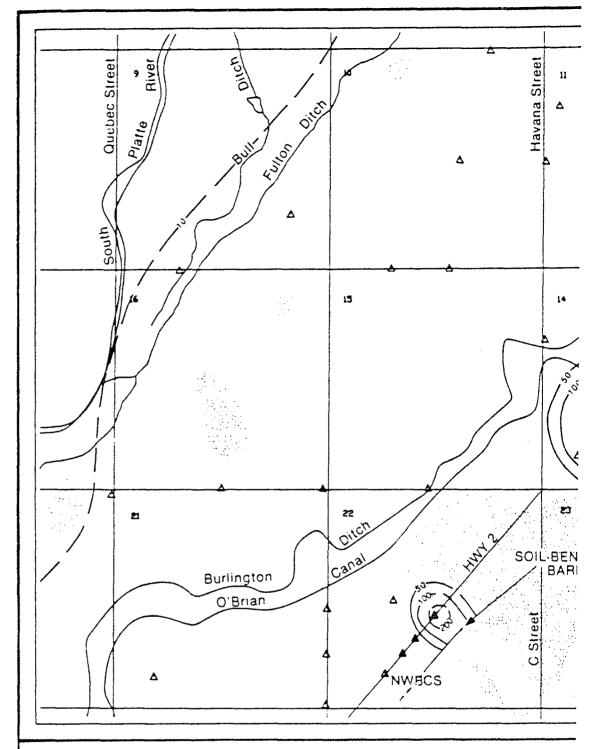
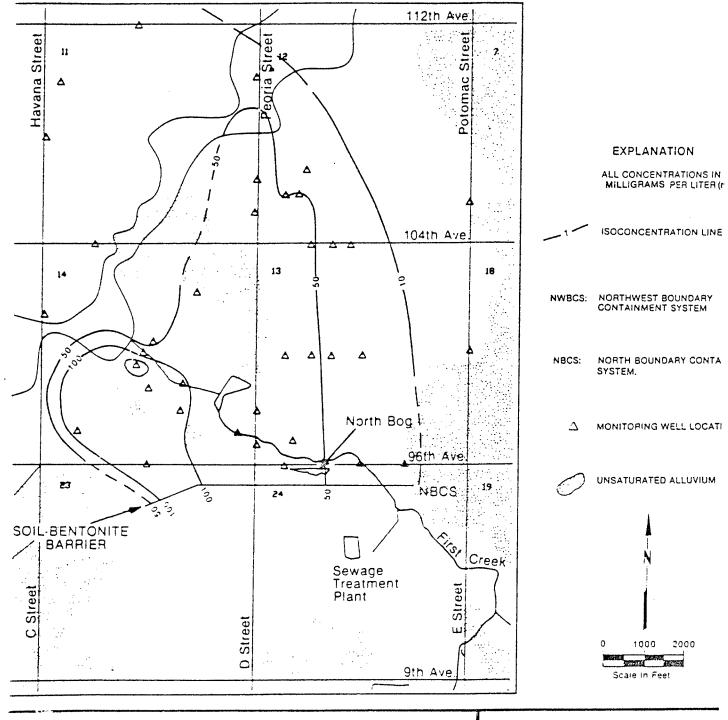


Figure F-52 MAGNESIUM CONCENTRATION DISTRIBUTION, mg/l, 3RD QUARTER, FY87. ALLUVIAL AQUIFER

SOUPCE.ESE. 1983



Prepared for: U.S. Army Program Manager's For Rocky Mountain Arsenal

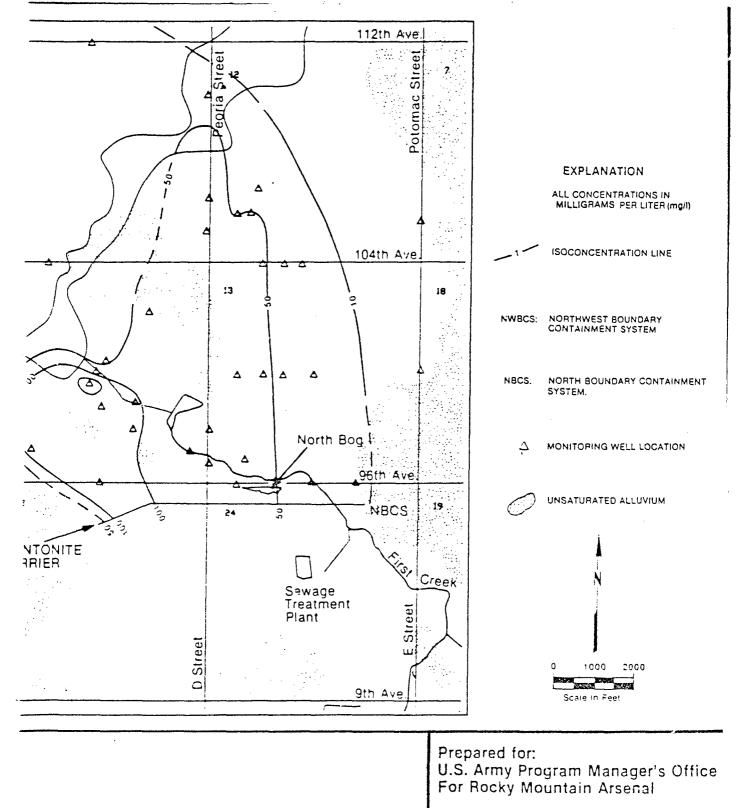
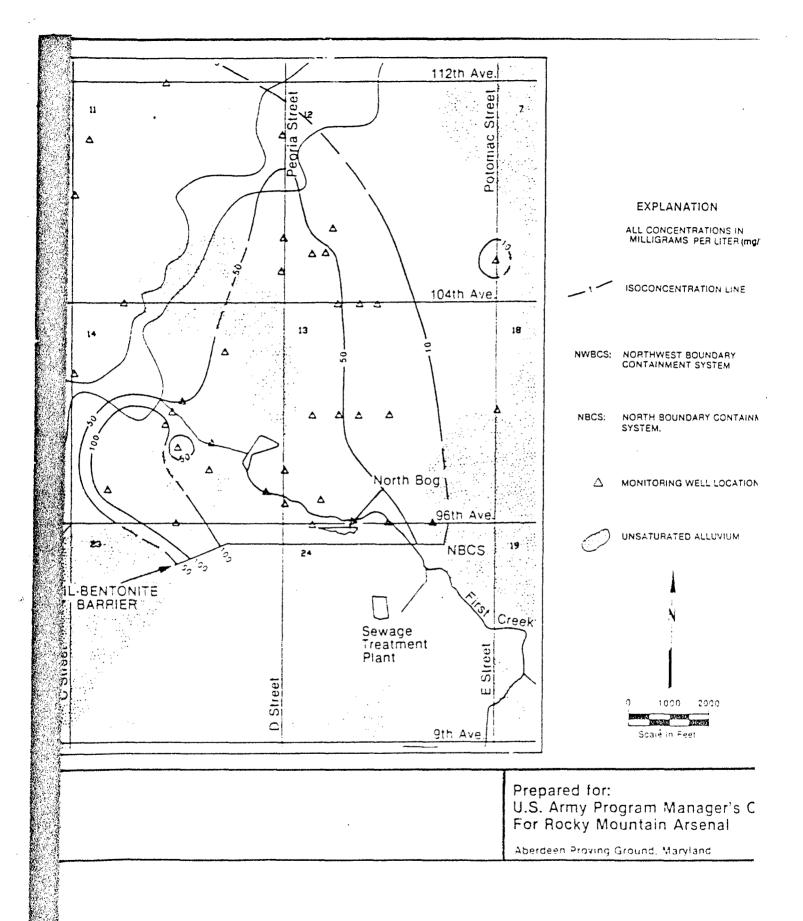


Figure F-53 MAGNESIUM CONCENTRATION DISTRIBUTION, mg/l, 4TH QUARTER, FY87, ALLUVIAL AQUIFER

SOURCE ESE 1988



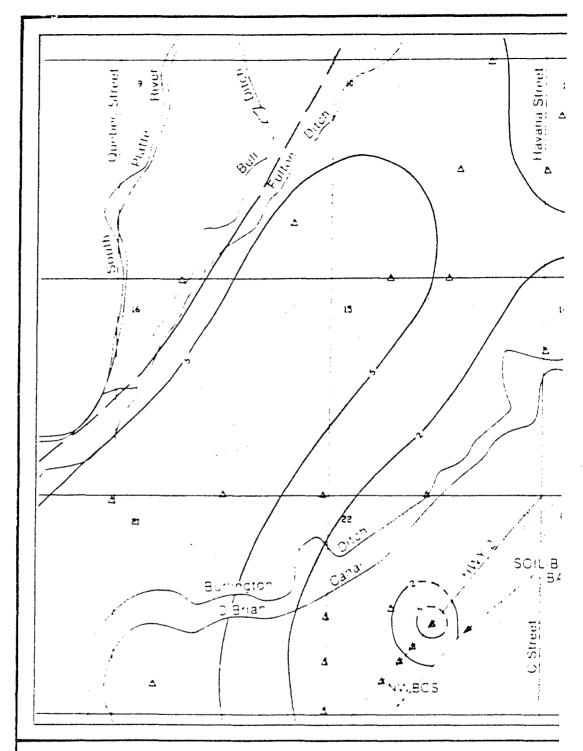
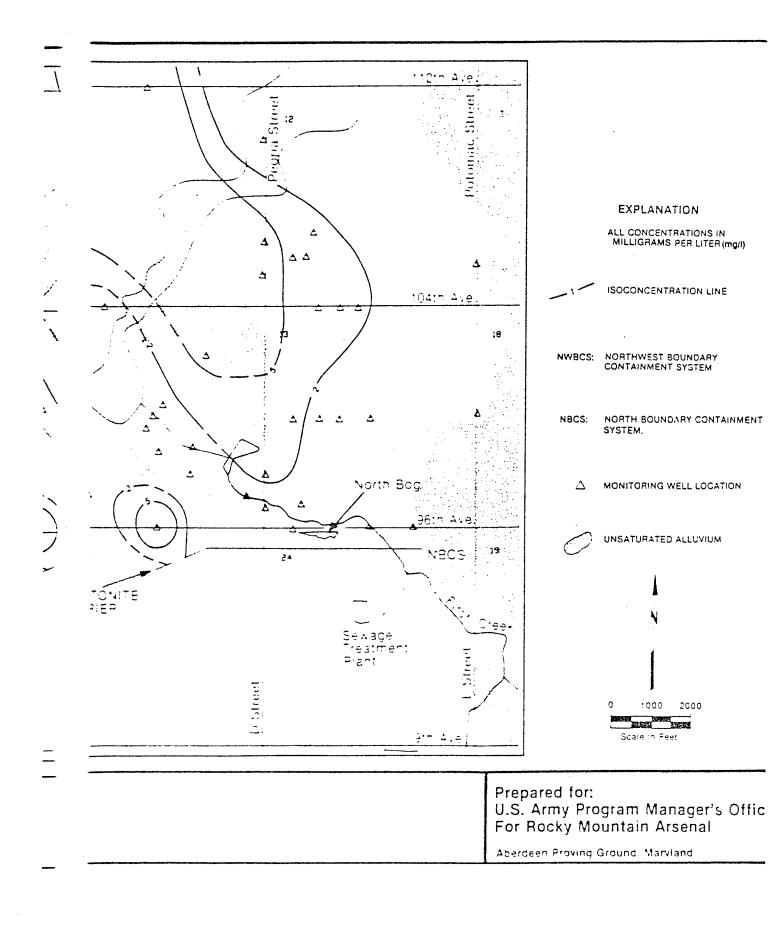


Figure F-54 NITRATE CONCENTRATION DISTRIBUTION, mg/l, 3RD QUARTER, FY87, ALLUVIAL AQUIFER

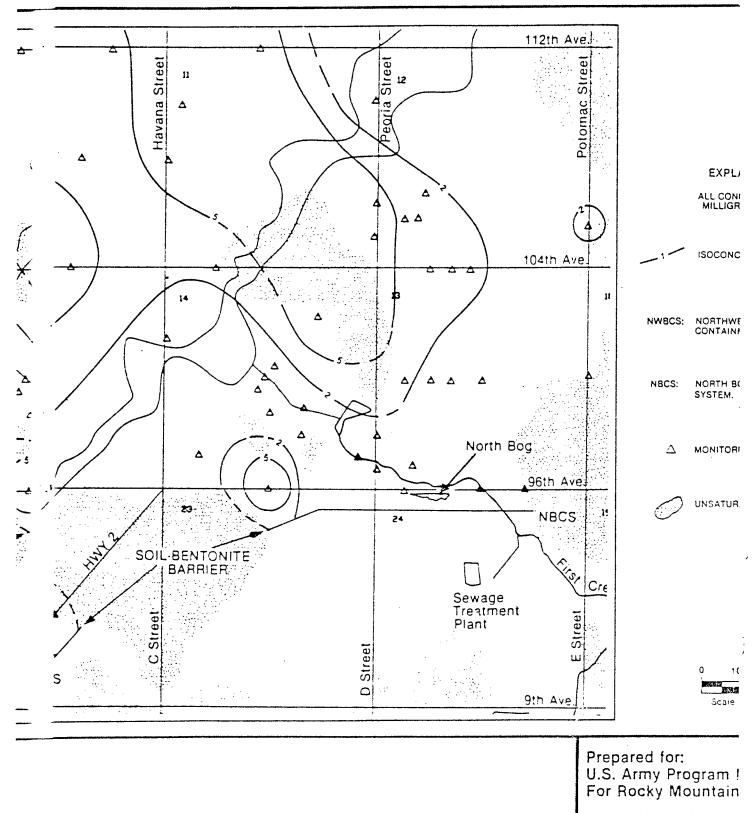
Johans Esende



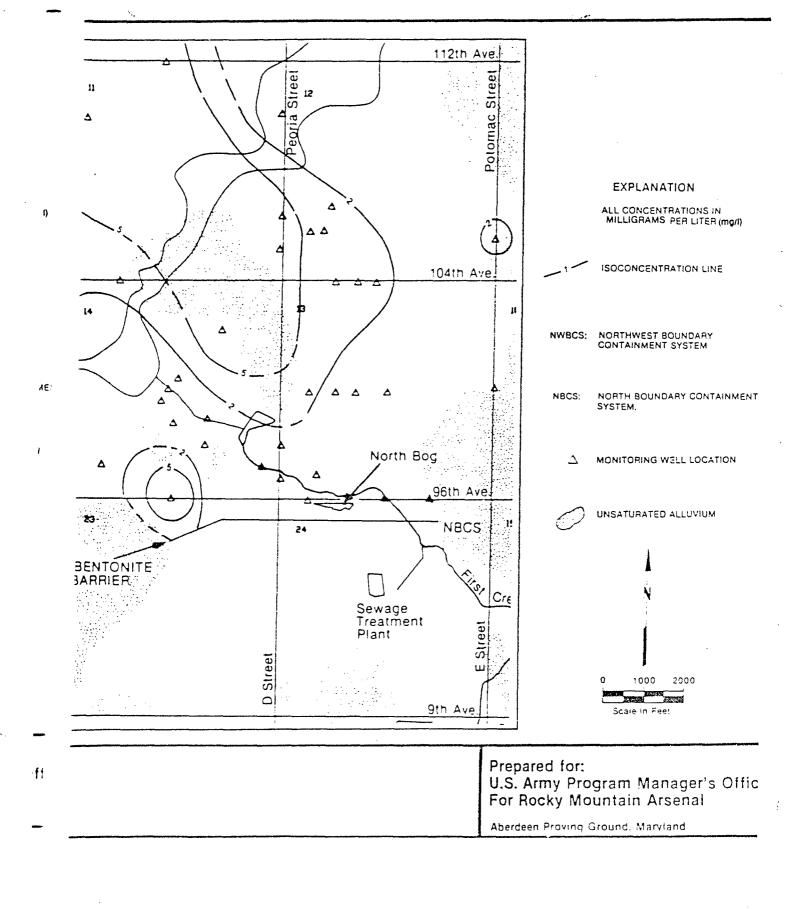
Havana Street Quebec Street South ıs 21 Discr soit Burlington O'Brian NWBCS

Figure F-55 NITRATE CONCETRATION DISTRIBUTION. mg/l, 4TH QUARTER. FY87, ALLUVIAL AQUIFER

SOUPCE ESE 1986



Aberdeen Proving Ground, 1



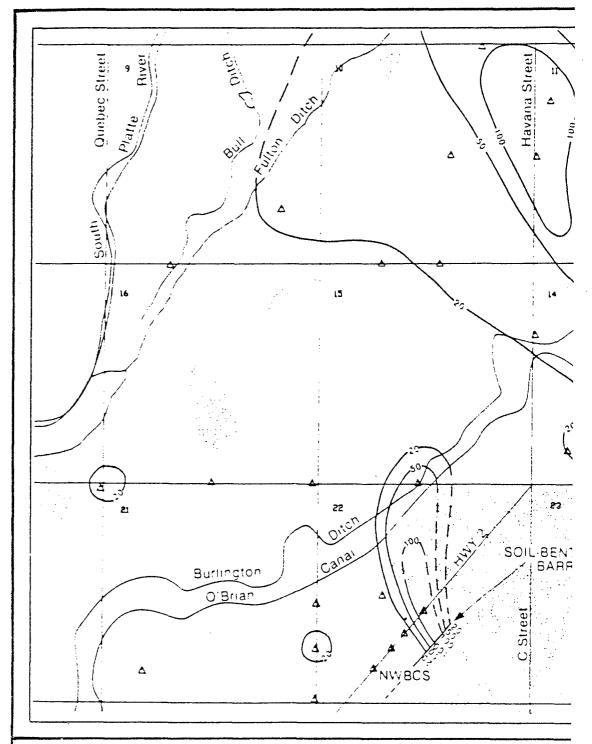
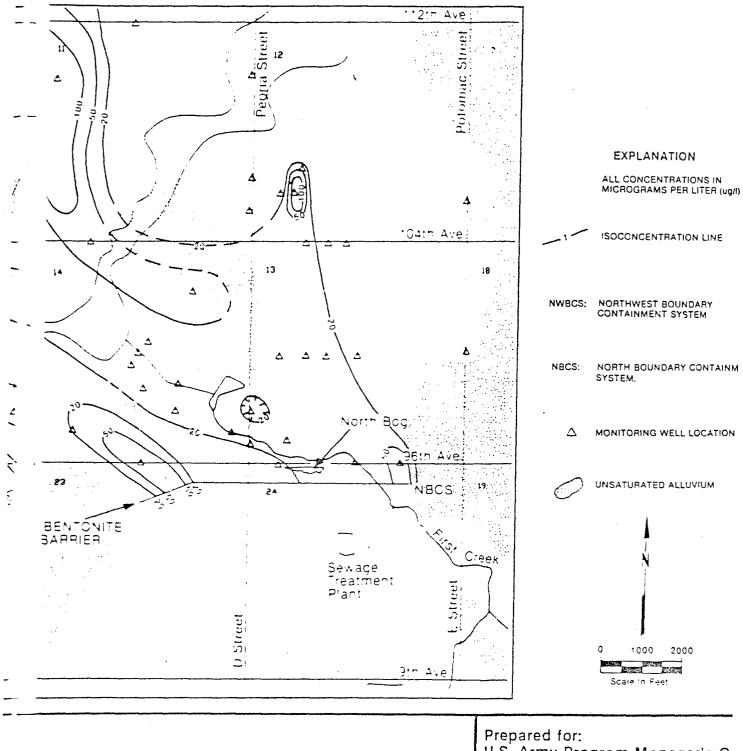
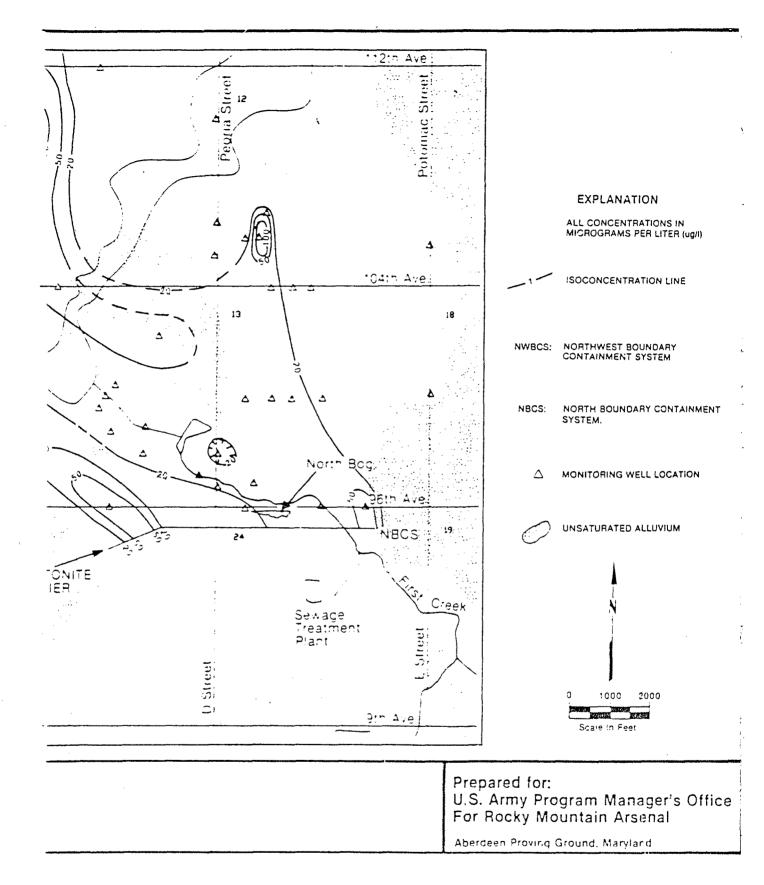


Figure F-56
ZINC CONCENTRATION DISTRIBUTION, ug/I, 3RD QUARTER, FY87, ALLUVIAL AQUIFER

SCUPCE.ESE 1988



Prepared for: U.S. Army Program Manager's O For Rocky Mountain Arsenal



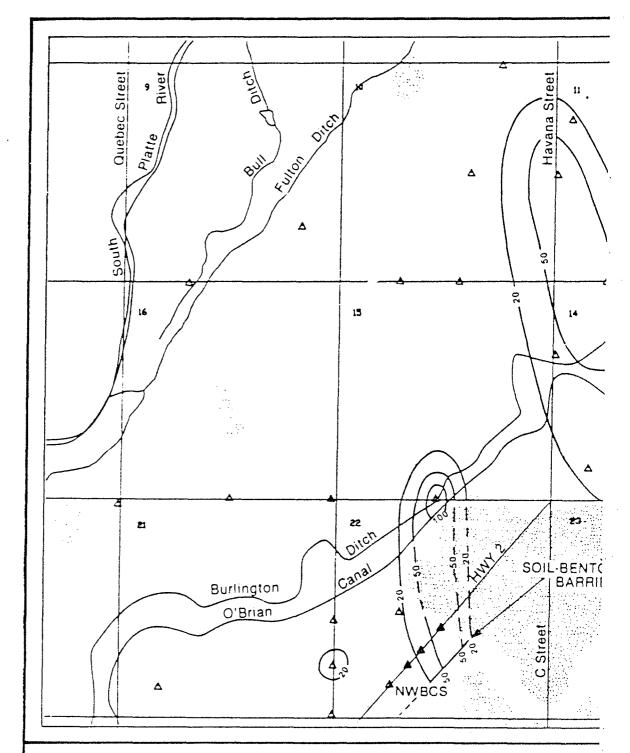
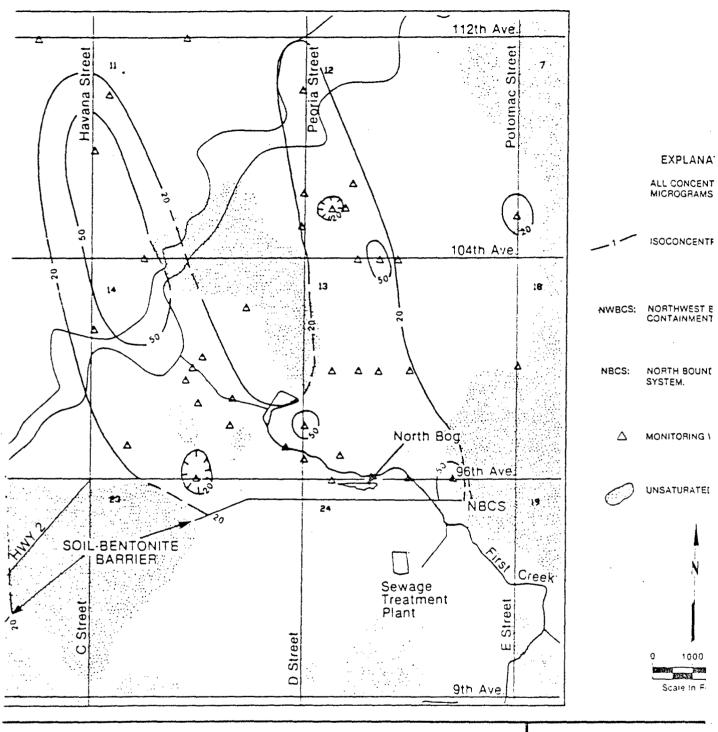
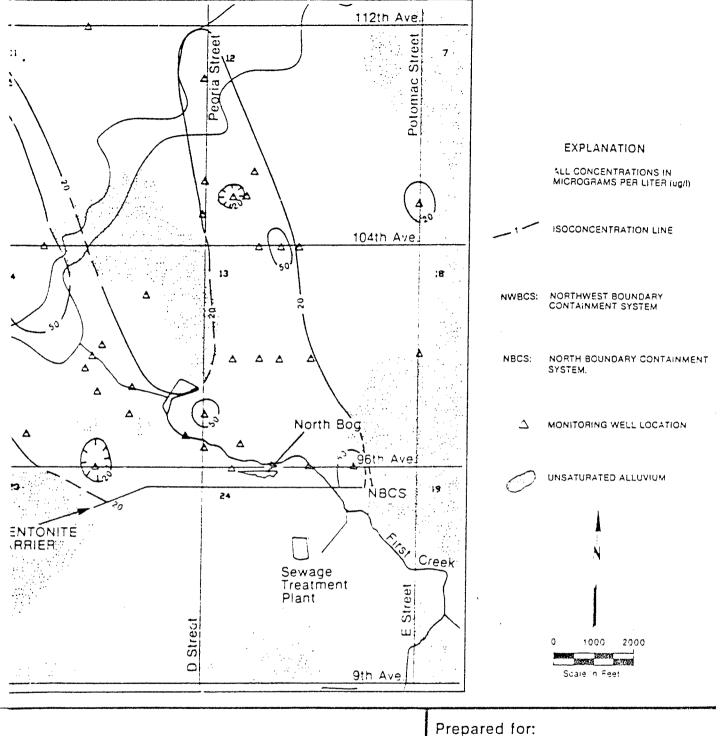


Figure F-57 ZINC CONCENTRATION DISTRIBUTION, ug/l, 4TH QUARTER, FY87, ALLUVIAL AQUIFER

SOUPCE ESE 1988



Prepared for: U.S. Army Program Ma For Rocky Mountain A



Prepared for: U.S. Army Program Manager's Office For Rocky Mountain Arsenal

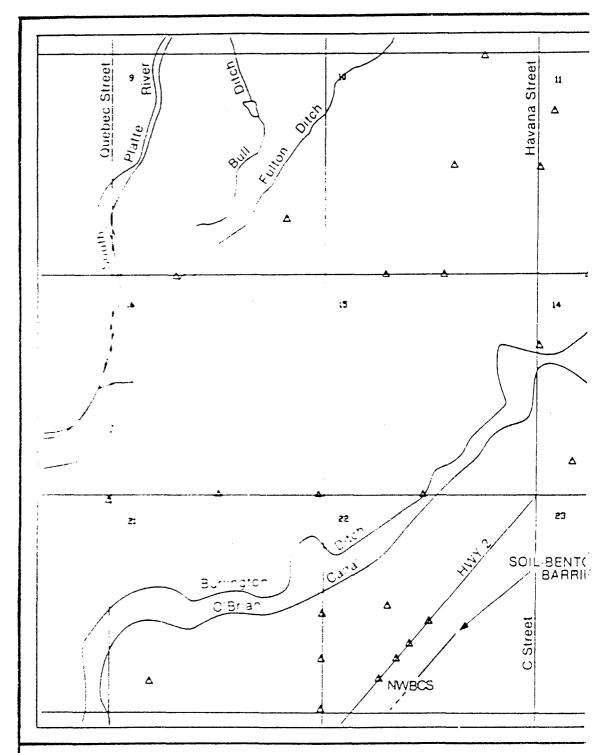
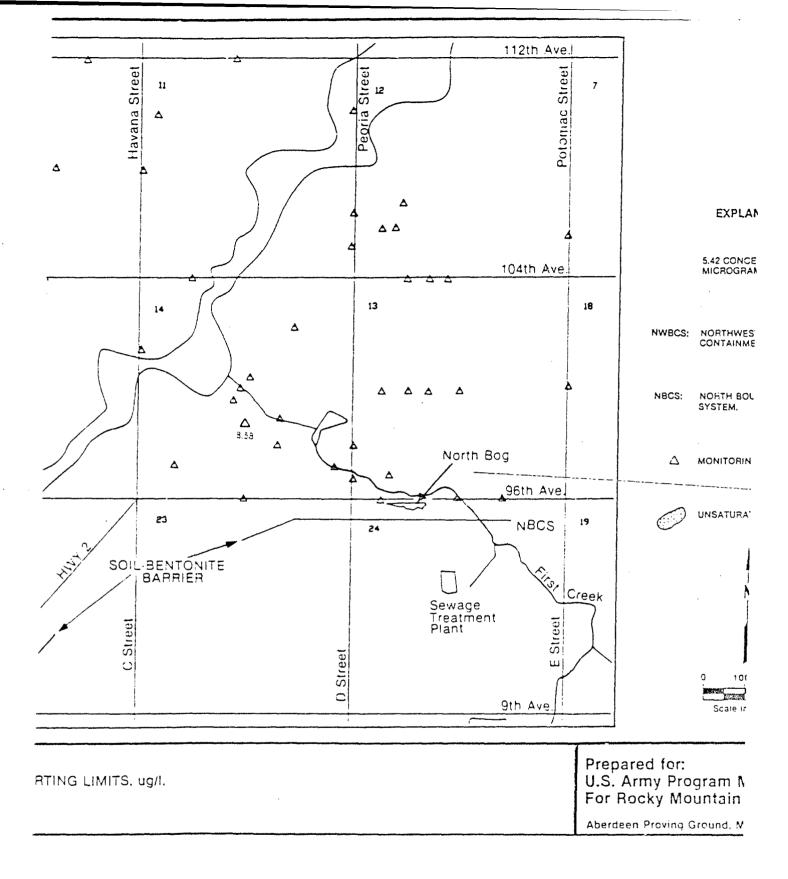
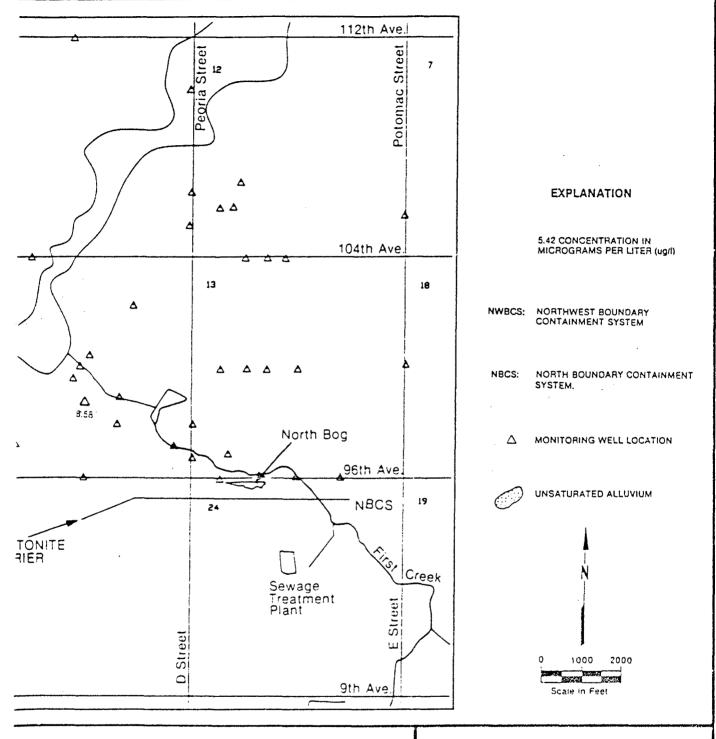


Figure F-58
CADMIUM CONCENTATIONS EXCEEDING CERTIFIED REPORTING LIMITS, ug/l, 3RD QUARTER, FY87, ALLUVIAL AQUIFER

SOURCE.ESE.1988







Prepared for: U.S. Army Program Manager's Office For Rocky Mountain Arsenal

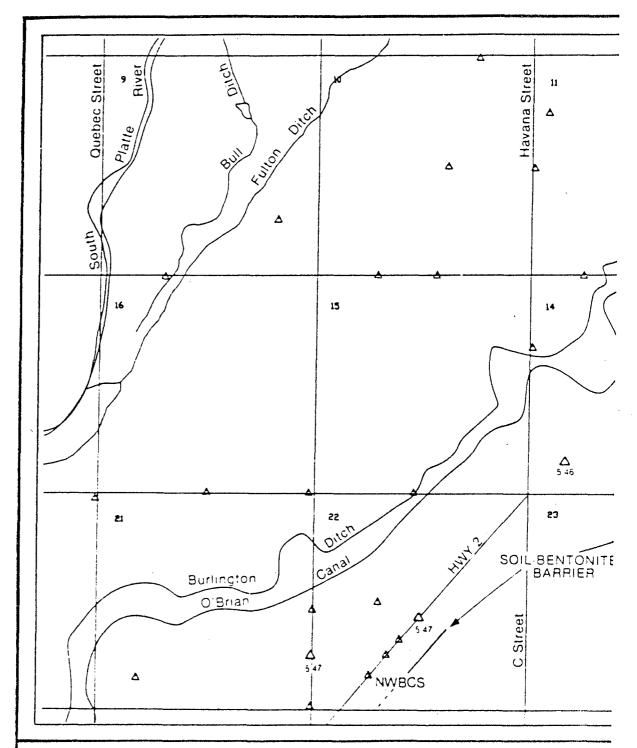
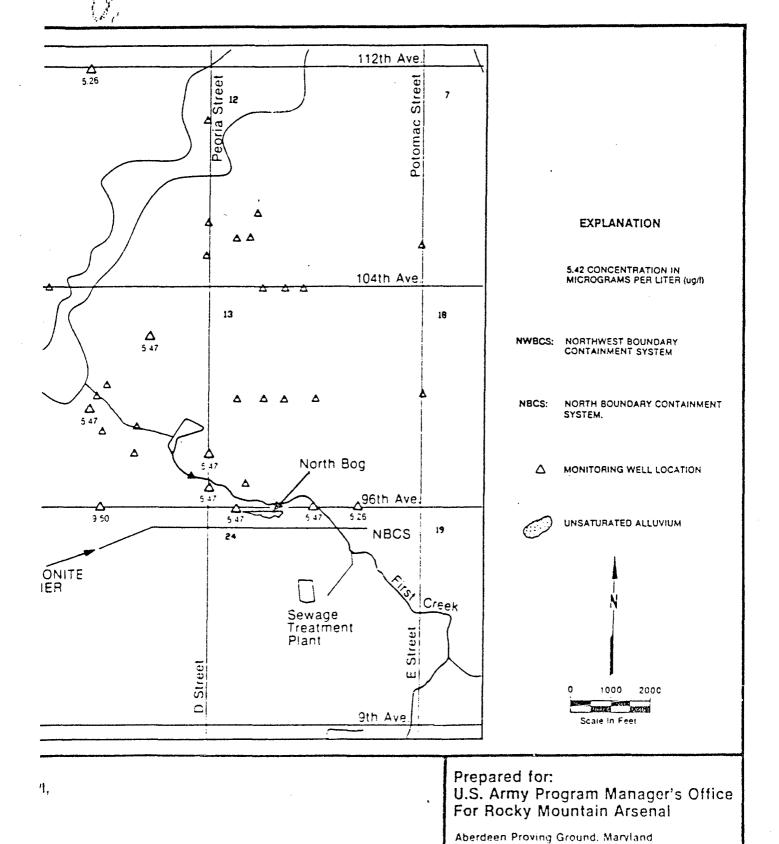


Figure F-59 CADMIUM CONCENTRATIONS EXCEEDING CERTIFIED REPORTING LIMITS, ug/l. 4TH QUARTER, FY87, ALLUVIAL AQUIFER

SOURCE ESE, 1988



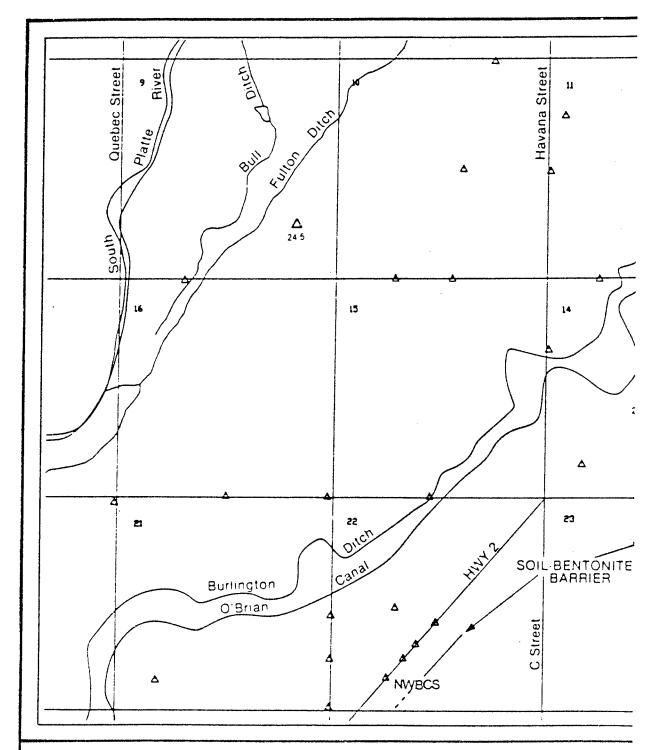
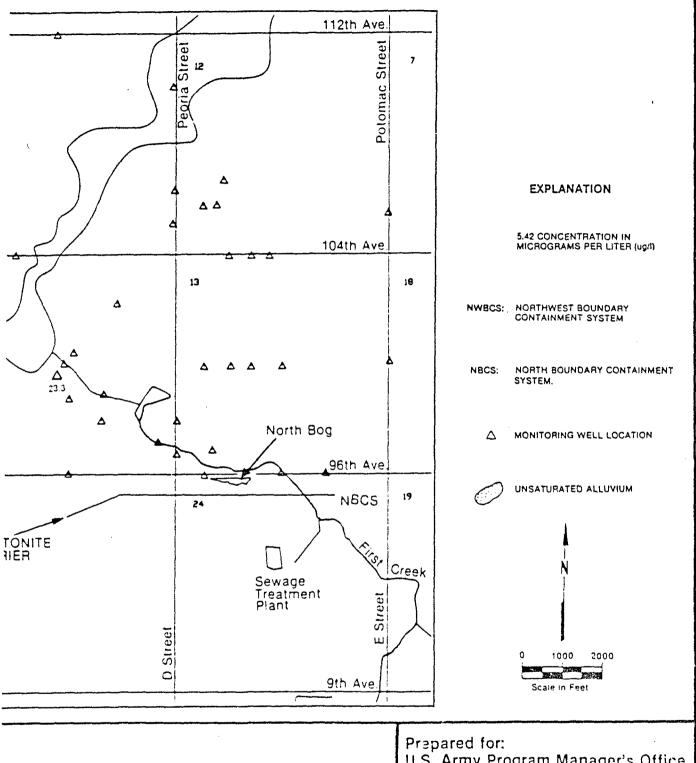


Figure F-60 LEAD CONCENTRATIONS EXCEEDING CERTIFIED REPORTING LIMITS, ug/l, 3RD QUARTER, FY87, ALLUVIAL AQUIFER

SOURCE ESE, 1998



Prapared for: U.S. Army Program Manager's Office For Rocky Mountain Arsenal

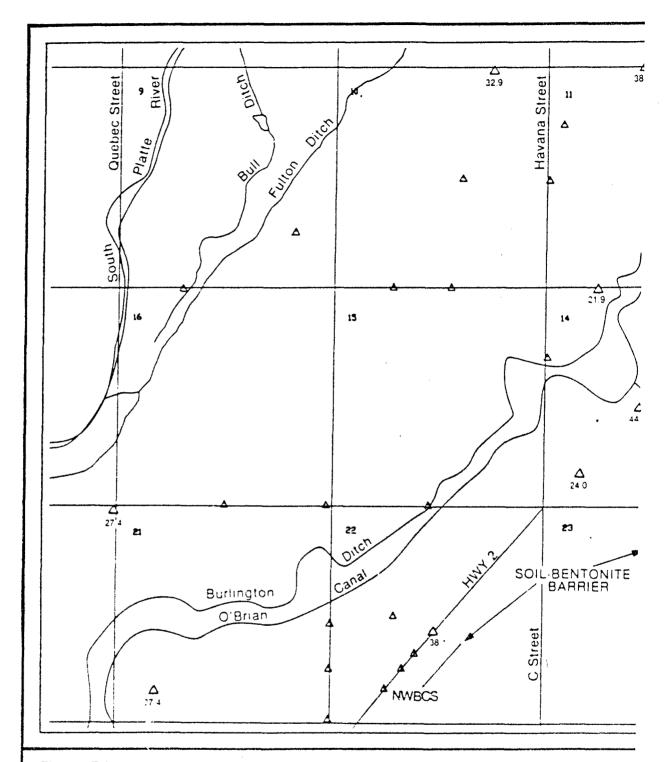
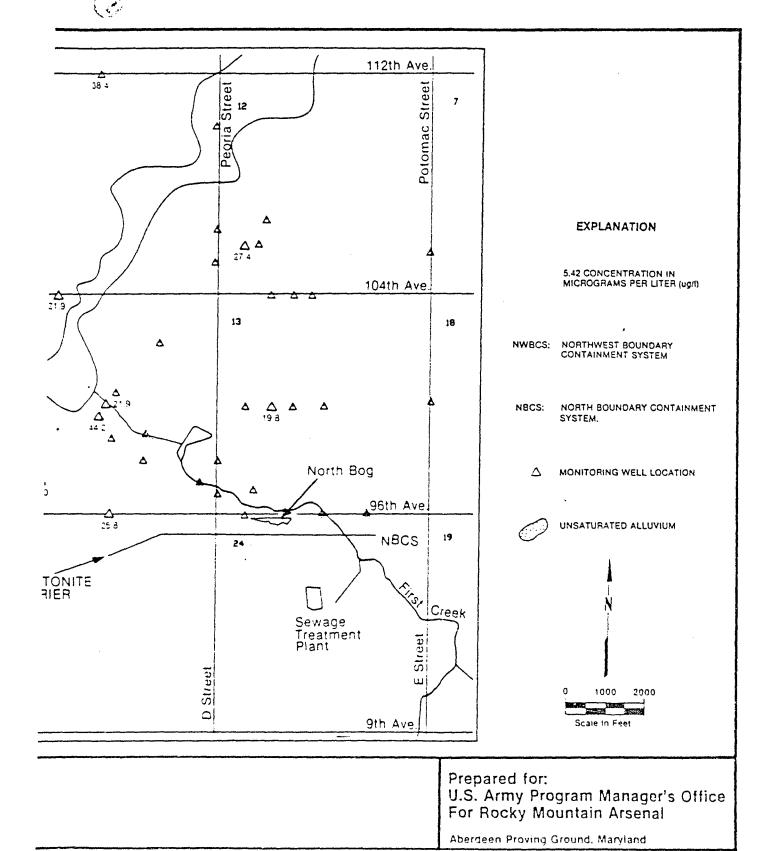


Figure F-61 LEAD CONCENTRATIONS EXCEEDING CERTIFIED REPORTING LIMITS, ug/l, 4TH QUARTER, FY87, ALLUVIAL AQUIFER

SOURCELESE 1988

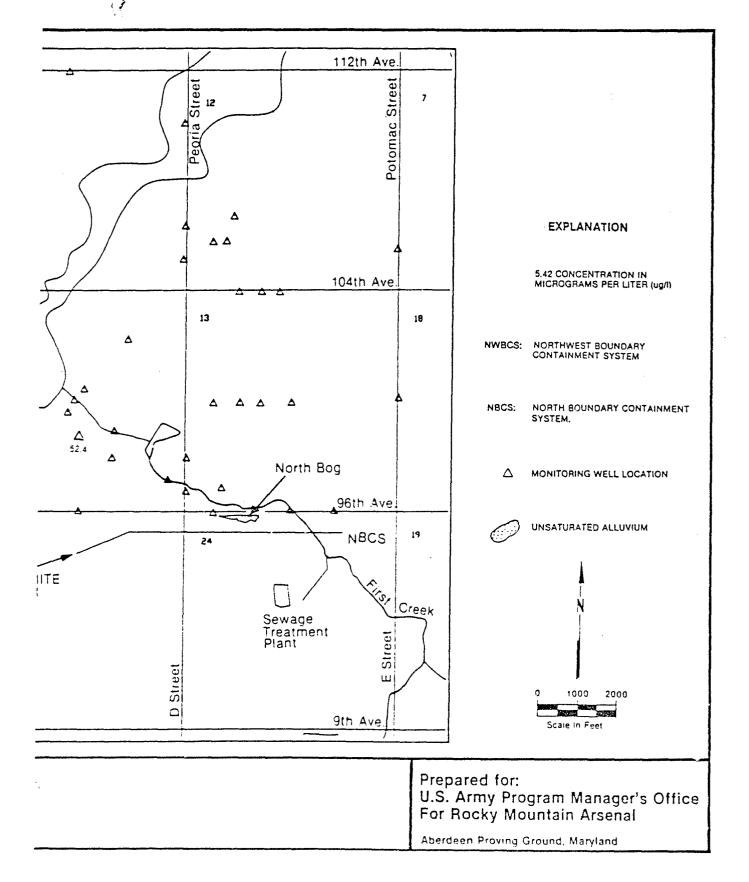


Quebec Street Havana Street River 11 Δ Δ South 16 15 14 Δ 23 22 21 SOIL-BENTONITE BARRIER Burlington O'Brian Δ C Street NWBCS

Figure F-62 CHROMIUM CONCENTRATIONS EXCEEDING CERTIFIED REPORTING LIMITS, ug/l, 3RD QUARTER, FY87, ALLUVIAL AQUIFER

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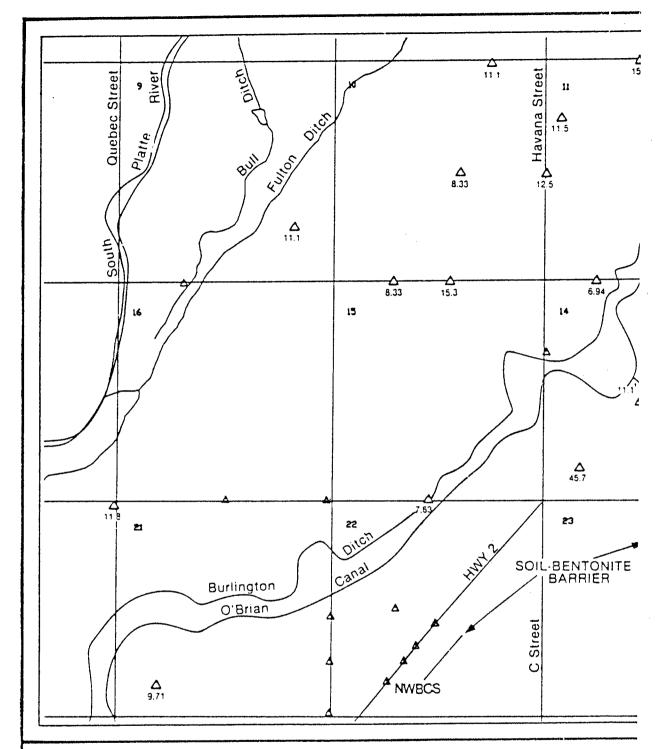
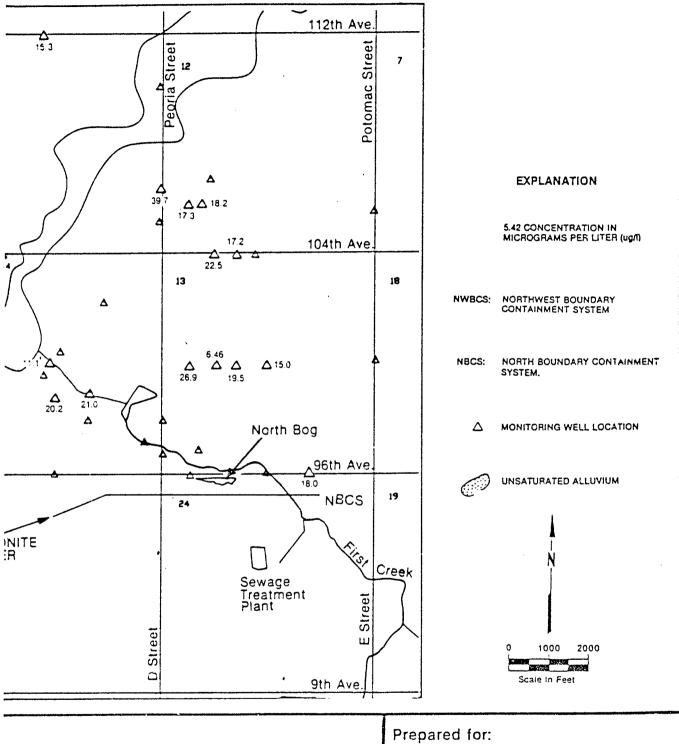


Figure F-63 CHROMIUM CONCENTRATIONS EXCEEDING CERTIFIED REPORTING LIMITS, ug/l, 4TH QUARTER, FY87, ALLUVIAL AQUIFER

SOURCE.ESE.1988





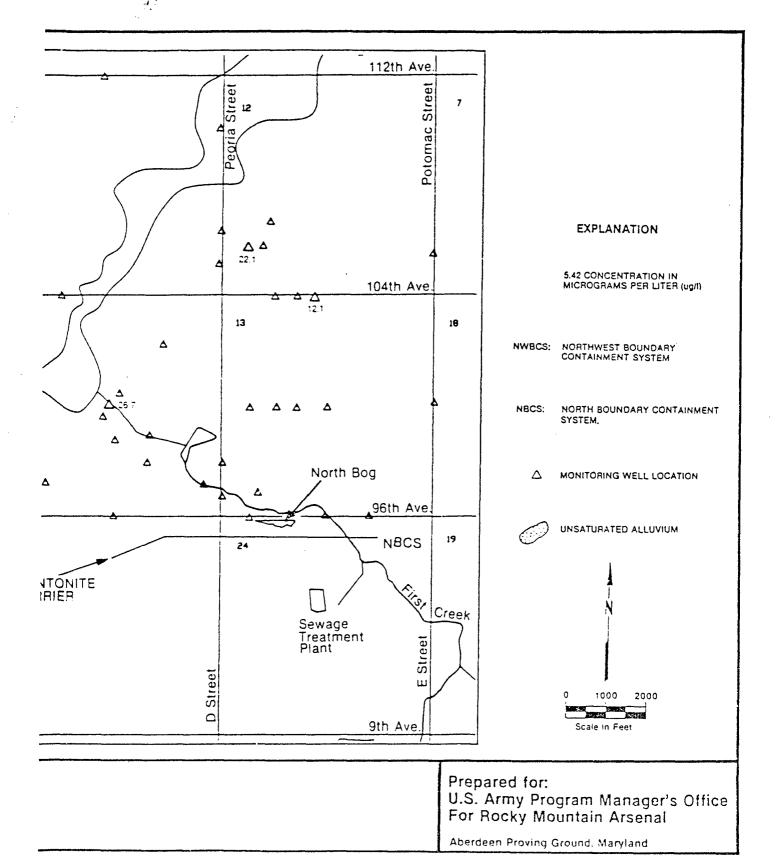
Prepared for: U.S. Army Program Manager's Office For Rocky Mountain Arsenal

Quebec Street Havana Street 15 14 Δ 23 22 21 Disch SOIL-BENTONITE Burlington O'Brian C Street ۵ **NWBCS** 

Figure F-64
COPPER CONCENTRATIONS EXCEEDING CERTIFIED REPOPTING LIMITS. ug/l, 3RD QUARTER, FY87, ALLUVIAL AQUIFER

SOURCE ESE, 1988

11



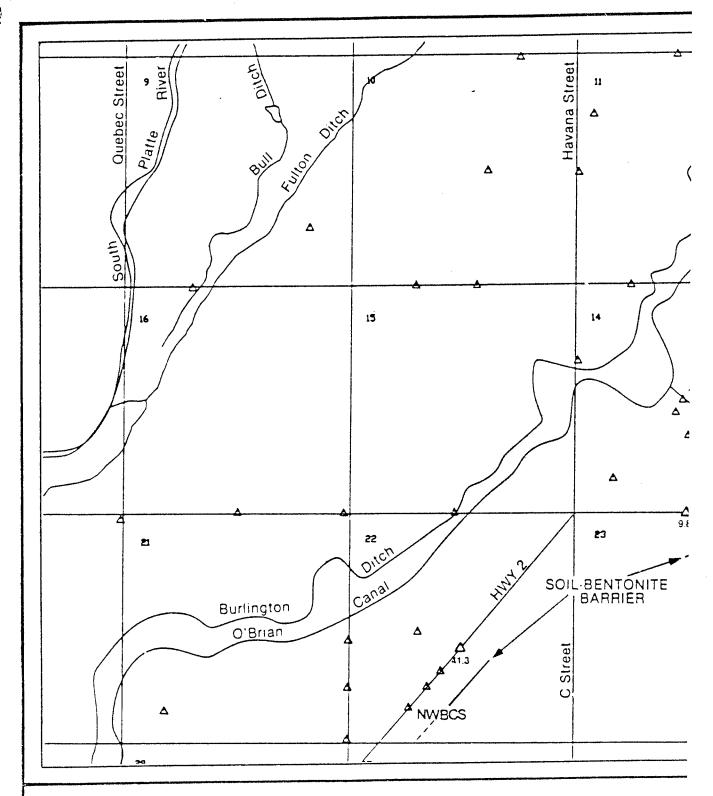
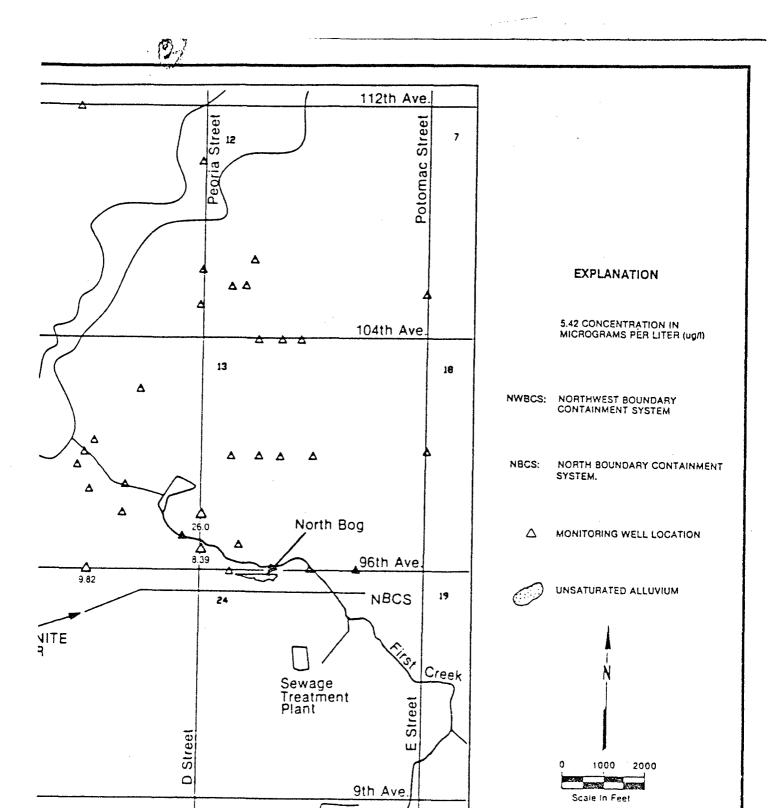


Figure F-65
COPPER CONCENTRATIONS EXCEEDING CERTIFIED REPORTING LIMITS, ug/i,
4TH QUARTER, FY87, ALLUVIAL AQUIFER

SOURCE ESE 1988

 $\tilde{\phi}_{j}$ 

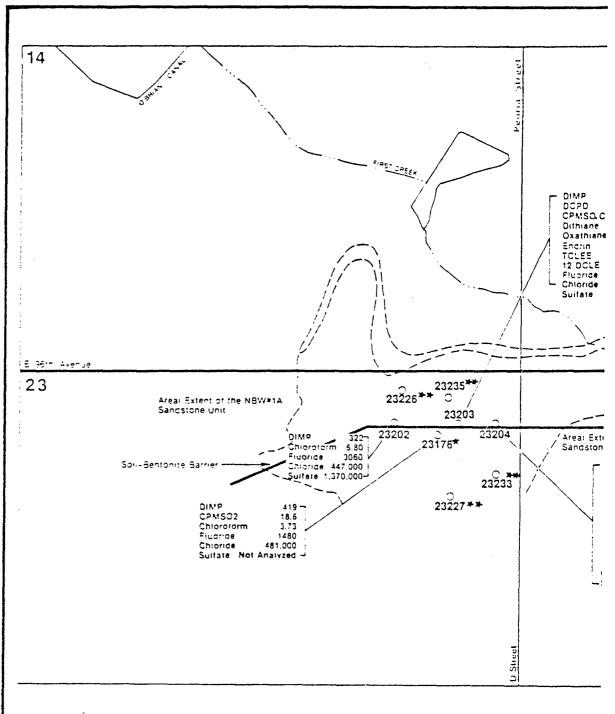


Prepared for: U.S. Army Program Manager's Office For Rocky Mountain Arsenal

DENVER FM

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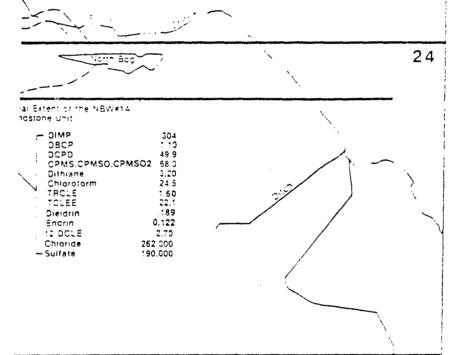
NOTE. Chemical concentrations presented are above certified reporting limits

Figure Fi66

WATER CHEMISTRY DATA FOR DENVER FM UNIT NBW#1A SPRING QUARTER, 1987

\$CUPCE ESE 1988

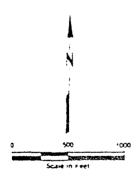
G.	387 96.4
ISO, CPM SO2	16.2
iane	3.60
thiane	2.40
វ:ភ	0.115
<b>E</b> E	3.80
CLE	2.60
iride	2010
oride d	164 000
ate 8	860.000



### **EXPLANATION**

- ★ Initial Screening Program (ISP) Data.
- \*\* Not completed at time of sampling.

All concentrations in micrograms per liter (ug/l).



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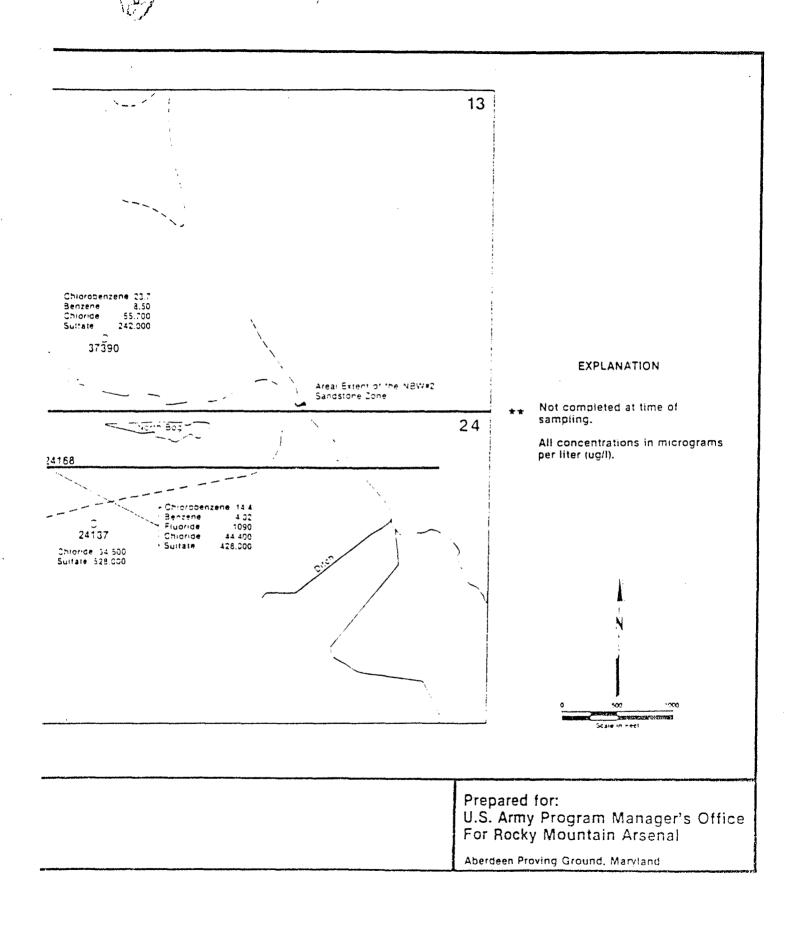
14 DIMP 1,100 Fluoride 2590 Chioride 467,000 Suitate 700,000 DIMP Chioropenzene 17.8 TRCLE 1.38 0 37371 Fluoride 418.000 Chloride Chioropen: 1,450,000 Suifate Benzene Chloride Suitate 37379 373! E. 96th Avenue C23236\*\* 23219 Area: Extent of the N6W#2 Sandstone Zone ---23 23161 Fluoride 1070 23200 Chioride 93.100 24168 Sulfate 309,000 Chioropenzene 16.9 TRCLE 1.30 Chioride 80.100 Chloride 41,500 t Sulfate 1,044,300 -Soil-Bentonite Barrier 80.100 Sullate 415.000 23209 Chloride 34 Flygride 4330 Chicride 50,400 Sulfate 290,000 Suttate 528

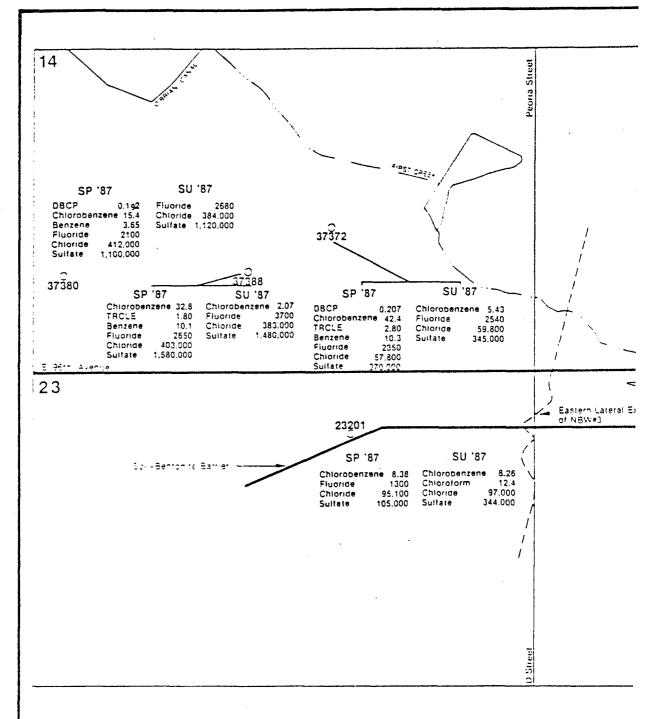
NOTE: Onemical concentrations presented are above certified reporting limits.

Figure F-67

WATER CHEMISTRY DATA FOR DENVER FM UNIT NBW#2 SPRING QUARTER, 1987

30UP08 88E 1988



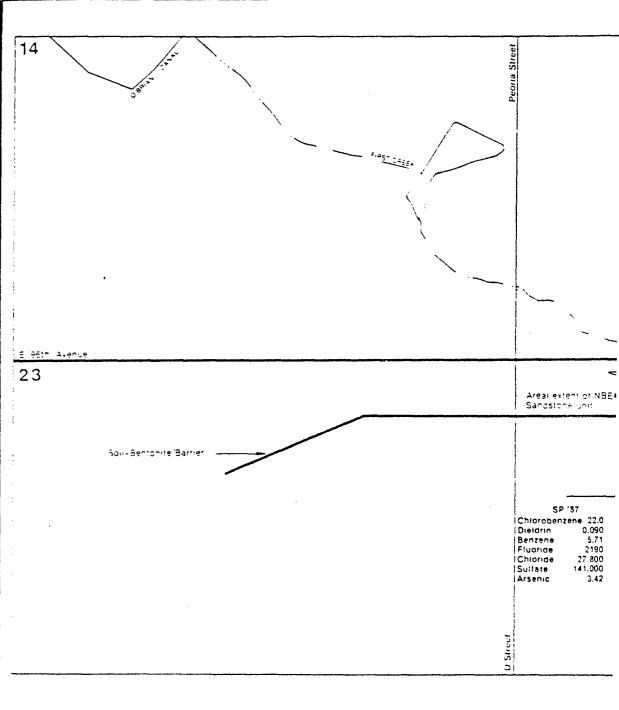


NOTE: Onemical concentrations presented are above certified reporting limits

Figure F-68

WATER CHEMISTRY DATA FOR DENVER FM UNIT NBW#3 SPRING AND SUMMER QUARTERS, 1987

SOUPCE ESE 1988

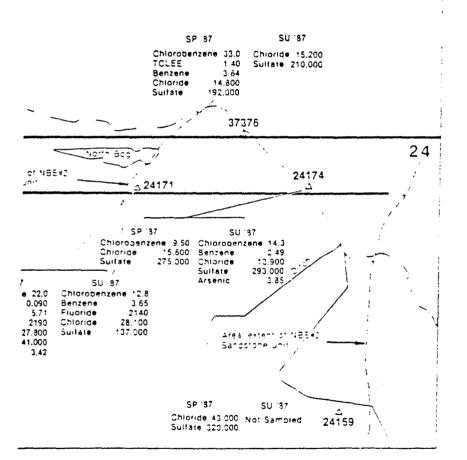


NOTE: Chemical concentrations presented are above certified reporting limits.

Figure F-69

WATER CHEMISTRY DATA FOR DENVER FM UNIT NBE#2 SPRING AND SUMMER QUARTERS, 1987

SCUPCE ESE 1988

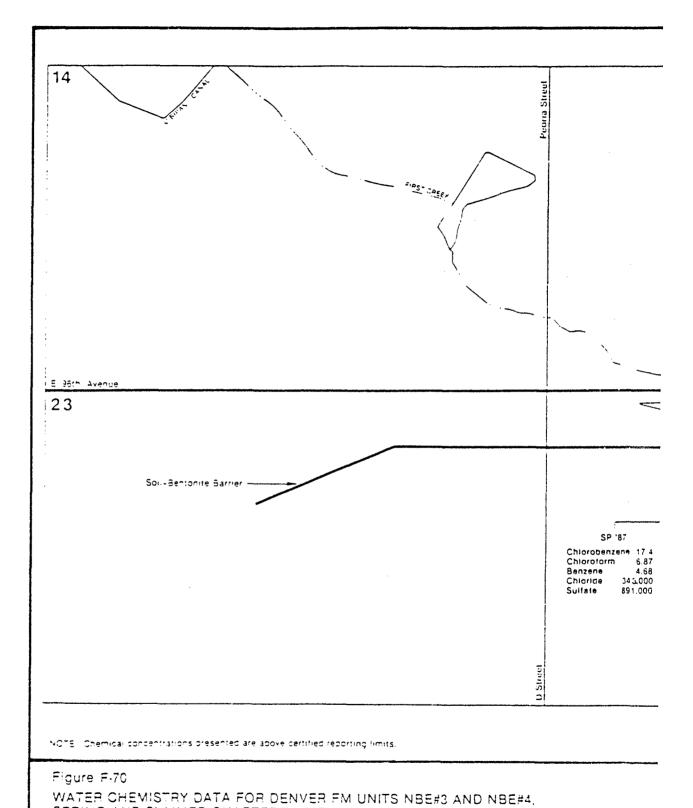


#### **EXPLANATION**

All concentrations in micrograms per liter (ug/l).

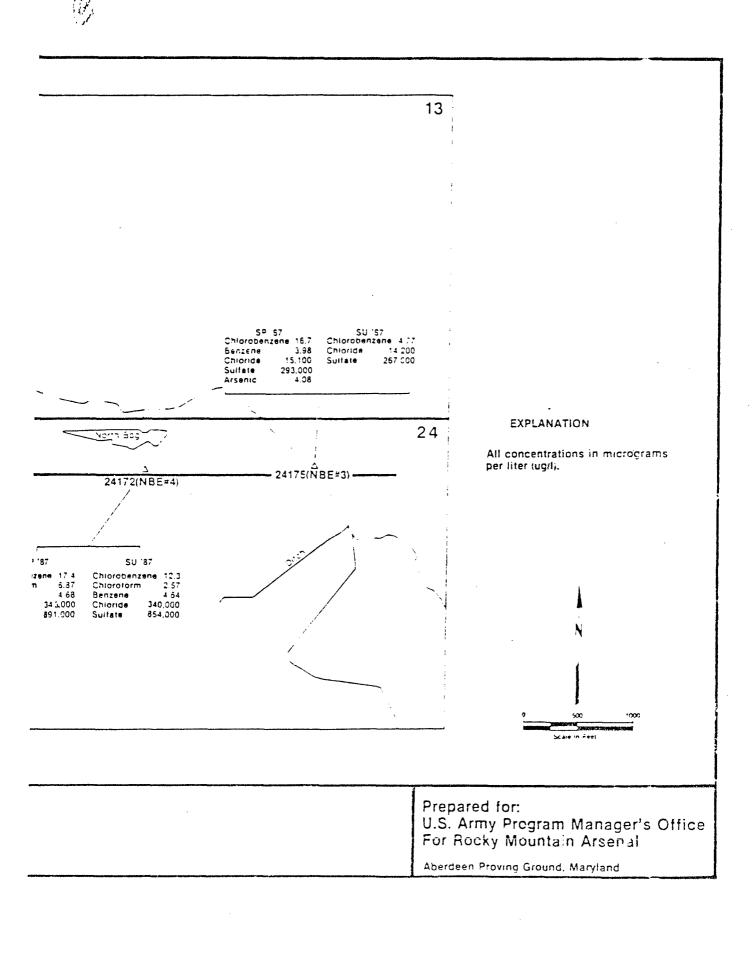


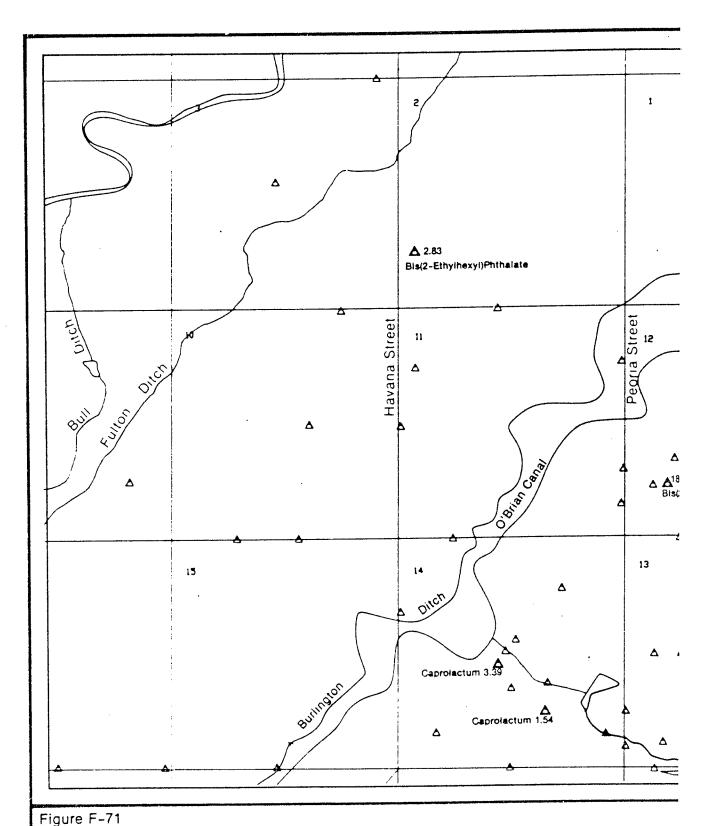
Prepared for: U.S. Army Program Manager's Office For Rocky Mountain Arsenal



SPRING AND SUMMER QUARTERS, 1987

SOUPCE ESE 1988

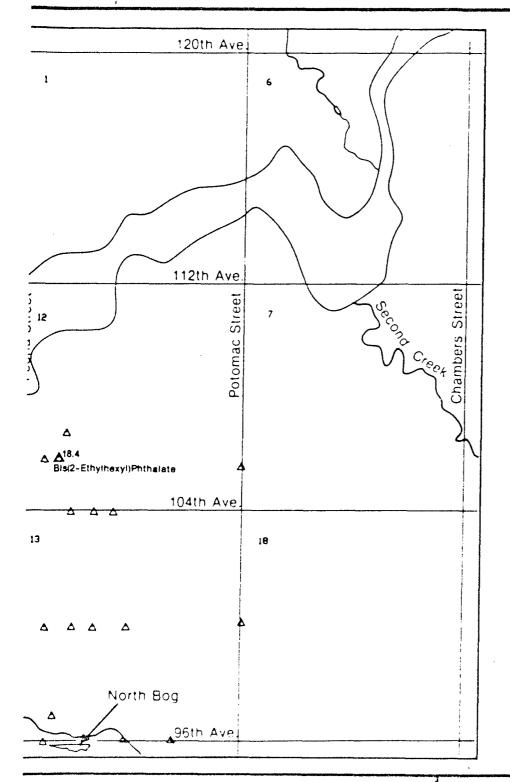




NONTARGET COMPOUNDS (BIS(2-ETHYLHEXYL)PHTHALATE, CAPROLACTUM) IDENTIFIED BY GC/MS ANALYSIS, ug/l, TASKS 4 AND 44, ALLUVIAL AQUIFER

SOURCE: Hunter/ESE, 1988





**EXPLANATION** 

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Prepared for: U.S. Army Program Manager's Office For Rocky Mountain Arsenal

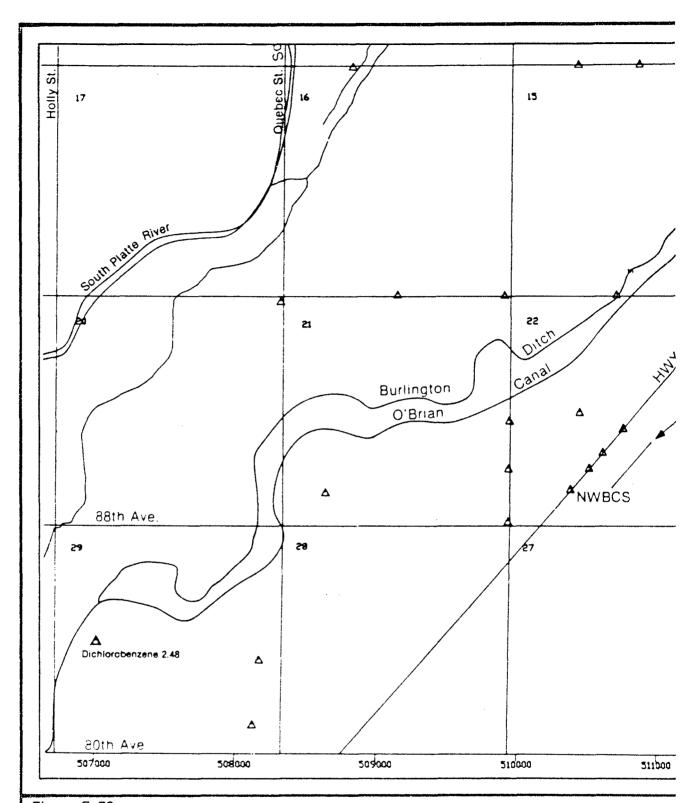
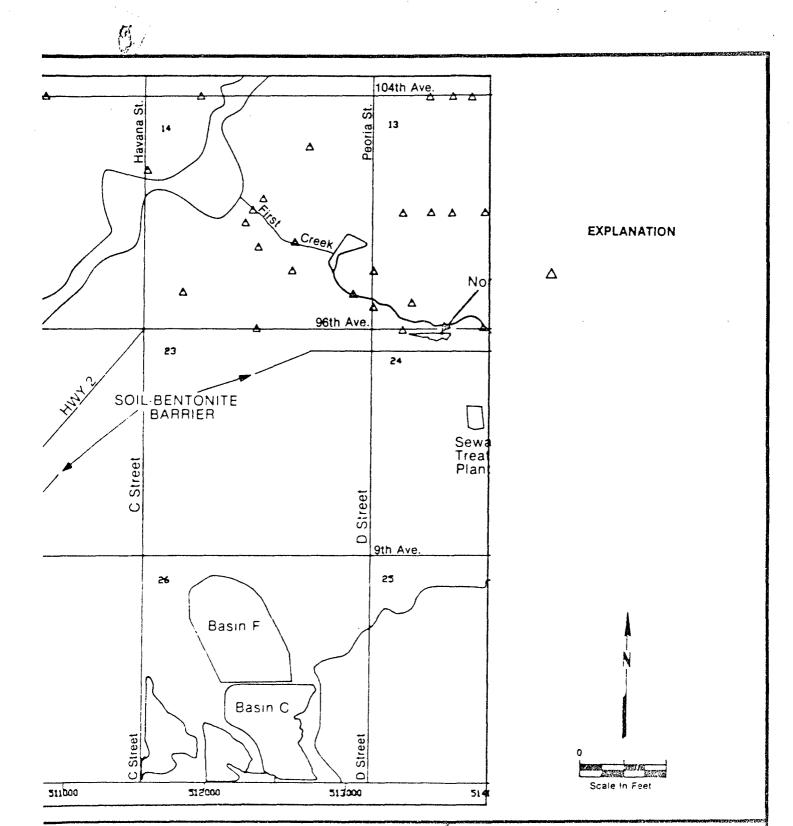


Figure F-72 NONTARGET COMPOUND (DICHLOROBENZENE) IDENTIFIED BY GC/MS ANALYSIS. ug/I, TASK 4 AND 44, ALLUVIAL AQUIFER

SOURCE: Hunter/ESE, 1988



Prepared for: U.S. Army Program Manager's Office For Rocky Mountain Arsenal

F.2 WATER QUALITY DATA

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GROUND WATER

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COMPOUND   3RD QUARTER FY87   4TH QUARTER FY87   111TCE	WELL #	AQUIFER ALL	SCREENE INTERVA 0.0- (		ETER	BEDROCK DEPTH 20.5	BEDROCK LITHOLOGY SH	WQAQ 1	DENVER SAND
112TCE						4TH		87	
11DCE									
11DCLE									
120CLE									
AS									
BTZ									
C6H6 CA 120000.000 111000.000 CCL4 (2.400 (2.400 CD (5.160 5.470 CH2CL2 (5.000 (5.000 CH2CL3 (1.400 (1.400 CL 275000.000 267000.000 CL6CP (0.070 (0.070 CL5CH5 (0.580 (0.580 CL3AN CPMS (1.300 (1.300 CPMSO 59.100 (3.300 CPMSO (4.700 (4.700 CR (5.960 CU (7.940 8.390 CU (7.940 8.390 CDDPD (0.130 (0.130 CPMSO (0.130 (0.130 CP									
CA 120000.000 111000.000 CCL4 (2.400 (2.400 (2.400 CD CCL4 (2.400 (2.400 CD CCL4 (2.400 CD CD CS.160 S.470 CH2CL2 (5.000 (5.000 CH2CL3 (1.400 CL CL6CP (1.400 CL CL6CP (0.070 CD.6CH2CL3 (1.400 CD.6CH2CL3 (1.400 CD.6CH2CL3 (1.400 CD.6CH2CL3 (1.400 CD.6CH2CL3 (1.400 CD.6CH2CL3 (1.400 CD.6CH2CL3 (1.300 CD.6CH2C) (1.300 C									
CCL4 (2.400 (2.400) CD (5.160) 5.470 CH2CL2 (5.000) (5.000) CHCL3 (1.400) (1.400) CL 275000.000 267000.000 CL6CP (0.070) (0.070) CL6CP (0.070) (0.580) CL0AN (1.300) (1.300) CPMSO (59.100) (4.700) CR (5.960) (4.700) CR (5.960) (0.130) CPMSO (4.700) (4.700) CR (5.960) (0.130) DBCP (0.130) (0.130) DCPD (0.130) (0.130) DCPD (0.130) (0.130) DIMP (78.400) (43.700) DIMP (78.400) (43.700) DIMP (1.100) (1.100) DLDRH (1.100) (1.100) DLDRH (1.200) (45.200) DMMP (15.200) (45.200) ENDRN (0.052) (0.052) ETC6H5 (1.280) (1.280) ETC6H5 (1.280) (1.280) ETC6H5 (1.280) (1.280) ETC6H5 (1.280) (0.480) ETC6H5 (1.280) (0.480) ETC6H5 (1.280) (0.600) ETC6H5 (1.280) (0.600) ETC6H5 (1.280) (1.280) ETC6H5 (1.280) (1.290) ETC6H5 (1.290) (1.290) ETC6H5 (1.290) (1.290) ETC6H5 (1.200) (1.290) ETC6H5 (1.									
CH2CL2									
CHCL3			_						
CL 275000.000 267000.000 CL6CP (0.070 (0.070 CLC6H5 (0.580 (0.580 CLDAN (0.580 (0.580 CLDAN (0.580 (0.580 CLDAN (0.580 (0.580 CPMSO (0.580 (0.580 CPMSO (0.580 (0.580 CPMSO (0.580 (0.58			2						
CL6CP						7			
CLC6HS CLDAN CPMS CLDAN CPMS CPMSO CPMSO CPMSO CPMSO2 CR CS CS CU CR CS CU CR CS CU CR CS CU CR CO CO CU CR CO						4			
CPMSO 59.100 63.800 CPMSO2 (4.700 63.800 CPMSO2 (4.7700 63.800 CR (5.960 CU (7.940 8.390 DBCP (0.130 60.130 DCPD \$4.100 30.500 DIMP 78.400 43.700 DITH (1.100 61.100 DLDRN 0.291 (0.060 DMDS (1.800 61.800 DMMP (15.200 61.800 DMMP (15.200 61.800 DMMP (15.200 61.800 DMMP (15.200 61.800 ENDRN (0.052 60.052 ETC6H5 (1.280 61.280 FL 2090.000 2190.000 HG (0.480 60.060 K 4130.000 4640.000 K 4130.000 64400.000 MIBK (1.210 61.210 MG 68100.000 64400.000 MIBK (12.900 614.000 MIBK (12.900 71.350 MXYLEN (1.350 13.500 MXYLEN (2.000 27600.000 NIT 667.000 27600.000 NIT 667.000 27600.000 NIT 667.000 27600.000 NIT 667.000 27600.000 PFICE (0.053 0.053 PFICE (0.070 60.000 T120CE (1.200 61.200 TCLEE 14.400 9.3560 TROUE (1.100 61.100 XYLEN (2.470 62.470		CLC6H5	5						
CPMSO				•					
CPMSO2									
CR	•								
CU			•						
DCPD									
DIMP 78.400 43.700 DITH <1.100									
DITH			i.						
DLDRN         0.291         <0.060									
DMMP				0.2	291				
ENDRN									
ETC6H5									
FL 2090.000 2190.000 HG									
ISODR									
K 4130.000 4640.000  MEC6H5 (1.210 (1.210)  MG 68100.000 64400.000  MIBK (12.900 (12.900)  MXYLEN (1.350 (1.350)  NA 272000.000 276000.000  NIT 667.000 924.000  PB (18.600 (13.600)  PFICE (0.053 (0.053)  PPDOT (0.070 (0.070)  304 (13000.000)  T128CE (1.200 (1.200)  TCLEE (1.400)  XYLEN (2.470 (2.470)									
MEC6H5       <1.210       <1.210         MG       68100.000       64400.000         MIBK       <12.900       <12.900         MXYLEN       <1.350       <1.350         NA       272000.000       276000.000         NIT       667.000       924.000         OXAT       <2.000       <2.000         PB       <18.600       >13.600         PFICE       <0.053       <0.053         PPDDT       <0.070       <0.070         304       430000.000       400000.000         TCLEE       <1.200       <1.200         TCLEE       14.400       9.360         TRCLE       <1.100       <1.100         XYLEN       <2.470       <2.470									
MG 68100.000 64400.000 MIBK <12.900 <12.900 MXYLEN /1.350 1.350 NA 272000.000 276000.000 NIT 667.000 924.000 PB <18.600 13.600 PFICE /0.053 -0.053 PPDOT <0.070 70.070 SO4 430000.000 40000.000 T12DCE <1.200									
MXYLEN									
NA 272000.000 276000.000  NIT 667.000 024.000  OXAT <2.000									
NIT 667.000 024.000  0XAT <2.000 2.000  PB <18.600 13.600  PFICE <0.053 0.053  PPDDT <0.070 0.070  304 43000.000 40000.000  T12DCE <1.200 <1.200  TCLEE 14.400 9.360  TRCLE <1.100 <1.190  XYLEN <2.470 <2.470						2.5			
OXAT < 2.000						3			
PB									
PPDDT       < 0.070		₽8			*				
504       430000.000       400000.000         T12BCE       <1.200       <1.200         TCLEE       14.400       9.360         TRCLE       <1.100       <1.100         XYLEN       <2.470       <2.470									
T120CE						1 (			
TCLEE 14.400 9.360 TRCLE <1.100 <1.100 XYLEN <2.470 <2.470						. 4 1			
TROLE <1.100 <1.100 XYLEN <2.470 <2.470									
ZN 21.600 23.400									
		ZN		21.6	00		23.400		

WELL # 37309	AQUIFER ALL	SCREE INTER 0.0-	VAL	CASING DIAMETER 2.0	BEDROCE DEPTH 23.0	SH LITHOLOGY	WQAQ 1	DENVER SAND
	COMPO	UND	3RD	QUARTER FY8	.7 4	TH QUARTER F	. o 7	
	IIITCI			<1.700	, ,	(1.700	(8/	
	112TC	Ε		<1.000		<1.000		
	IIDCE	-		<1.100		<1.100		
	11DCLE 12DCLE			<1.200		<1.200		
	ALDRN	5		6.270		4.150		
	AS			<0.700 <3.070		. <0.070		
	BTZ			<2.000		₹3.070		
	C6H6			<1.340		(2.000		
	CA		14	14000.000		<1.340 117000.000		
	CCL4			<2.400		<2.400		
	CD			<5.160		5.470		
	CH2CL2			<5.000		<5.000		
	CHCL3 CL			<1.400		<1.400		
	CL6CP		52	4000.000 <0.700		444000.000		
	CLC6H5			<0.580		<0.070		
	CLDAN					<0.580		
	CPMS			<1.300		<1.300		
	CPMSO CPMSO2			27.100		55.500		
	CR			32.600 45.960		39.300		
	οu			<7.940		26.000		
	DBCP			0.176		0.329		
	DCPD			475.000		522.000		
	DIMP DITH			323.300		765.000		
	DLDRN			A.480		5.034		
	LMDS			/0.500 /1.800		- ខេត្តព្		
	DMMP			(15.200		41.900		
	ENDRN			0.520		775.900 70.052		
	ETCHH5			1.190		41.230		
	FL HG		ì	790.000		3060.000		
	ISOUR			3.240		< 9.480		
	?		,	- (U.609 520.cmg		C9.050		
	ME 14.85		•-	1.214		2590.000 21.210		
	363		7.1	446. Seq.		56102.000		
	MIBE MXYLEN			(13.466		12.000		
	081184 V3					1.5		
	NIT			មេហ្		•		
	PKAT		•-					
	: = : : : : : : : : : : : : : : : : : :			1		i de la companya di salah dari dari dari dari dari dari dari dari		
	IFFIF			• * * *		A re		
•	FFECT 304							
	And the second s			Programme VIII		A Section of		
				,5, ‡		• · · · · · · · · · · · · · · · · · · ·		
	TRACE					16.500		
	XYLEN					2.1799 2.1799		
	CH			20.000		56.4000		

Available to the second

WELL # AQUIFER INTER 37312 ALL 0.0-		BEDROCK BEDROCK DEPTH LITHOLOGY 13.5 SH	DENVER WQAQ SAND
COMPOUND	3RD QUARTER FY87	4TH QUARTER FY	87
112TCE	<1.000	<1.000	
11DCE 11DCLE	<1.100	<1.100	
12DCLE	<1.200 <0.610	<1.200 <0.610	
ALDRN	<0.070	<0.070	
AS BTZ	(3.070	<3.070	
C6H6	<2.000 <1.340	<2.000 <1.340	
CA	135000.000	116000.000	
CCL4 CD	<2.400	<2.400	
CH2CL2	<5.160 <5.000	5.470	
CHCL3	<1.400	<5.000 <1.400	
CL	258000.000	228000.000	
CL6CP CLC6H5	<0.070 <0.580	<0.070	
CLDAN		<0.580	
CPMS	<1.300	<1.300	
CPMSO CPMSO2	<4.200 <4.700	<4.200	
CR	<5.960	<4.700	
CU	<7.940	<7.940	
DBCP DCPD	<0.130	< 0.130	
DIMP	<9.310 <10.500	₹9.310 ₹10.500	
DITH	<1.100	<1.100	
DLDRN DMDS	1.520	0.135	
DMMP	<1.300 <15.200	<1.800 <15.200	
ENDRN	1.510	< 0.052	
ETC6H5 FL	/1.289 2090.000	1.280	
9G	<0.240	2310.999 49.480	
ISODR	<0.060	<0.060	
K MEC6H5	2430.000	4040.000	
MG	<1.210 72500.000	/1.219 61700.000	
MIBK	(12.900	<12.900	
MXYLEN NA	kl.350 usoooo.jjo	/1.350	
HIT	1020.000	22300 Jaco 1050 June	
OXAT	2.000	2.900	
99 1977 B	/18.600 9.953	12,890	
PPEDT	n = 7.5	1. 153 1. 170	
30.1	:8: 00.000	4150 Q. 200	
TIONE TOLES	1.200	1.250	
TROLE	1.100 21.100	1.790	
XYLEN	2.473	1.100 -2.470	
ΞN	/20.100	142.000	

DENVER

SAND

WELL # 37313

AQUIFER ALL	SCREE INTER 0.0-	VAL	CASING DIAMETER 2.0	BEDROCK DEPTH 28.8	BEDROCK LITHOLOGY SS	WQAQ 3
COMPOU 111TCE 111DCT 11DCLE 12DCLE ALDRN AS ETZ C6H6 CA CCL4 CD CH2CL2 CHCL3 CL CL6CP CLC6H5		27	QUARTER FYS	2	QUARTER FY	87
CLCGHS CLDAN CPMSO CPMSO CPMSO2 CR CU DBCP DCPD DIMP DITH DLDRN DMMP ENDRN ETCGHS FL HG ISGDR		2	. (1.300		<pre>&lt;0.580 &lt;1.300 &lt;4.200 &lt;4.700 &lt;4.700 &lt;7.940 &lt;0.130 &lt;9.310 3850.000 11.000 0.086 &lt;1.800 &lt;304.000 &lt;0.052 :1.280 2780.000 &lt;0.060</pre>	
METSH5 MG MIBK MKYDEN MA MET MAC FB FFCCB FFCCB TOLBE TOLBE TRACE		z 490	300.000 ×1.210 000.000 ×12.900 ×1.350 700.000 -35.400 -2.000 -3.700 -1.200 -1.200 -1.100 -1.100 -1.100 -1.100	117	9430,000 1.210 7000,000 ×12.000 ×1.350 00.1.35 1.10 44.230 01.55 01.00 01.00 01.00 01.100 01.470 034.500	

DENVER SAND 5

WELL # 37316	AQUIFER DEN	SCREENED INTERVAL 88.1- 96.2	CASING DIAMETER 4.0	BEDROCK DEPTH 31.0	BEDROCK LITHOLOGY SH	WQAQ 5
	COMP 111T 112T 11DC	CE CE	QUARTER FY8 <1.090 <1.630 <1.850	7 4тн	QUARTER FY <1.090 <1.630	87
	11DC 12DC	LE	<1.930 <2.070		<1.850 <1.930 <2.070	
	ALDR AS	N	<0.083 <2.500		<0.083 <2.500	
	BTZ C6H6 CA		<1.140 <1.920		<1.140 2.780	
	CCL4 CD		<1.690		<1.690	÷
	CH2CI CHCL:	3	<2.480 <1.880		<2.480 <1.880	
	CL CL6Ci		74500.000 <0.083		85500.000 <0.083	
	CLC6F	15	<1.360		(1.360	
	CLDAN CPMS	1	<0.152		<0.152	
	CPMS	)	<1.080 <1.980		<1.080 <1.980	
	CPMSC	)2	<2.240		<2.240	•
	CR CU		•		•	
	DBCP		<0.130		<0.130	
	DCPD		<9.310		(9.31)	
	DIMP DITH		27.000		<10.100	
	DITH		<1.590 <0.054	•	71.590 70.954	
	DMDS		<1.160		⟨1.160	
	DMMP		<15.200		16.300	
	ENDRN ETC6H		<0.960 <0.620		<0.050	
	FL		2060.000		79.529 ეტით.მტტ	·
	HG		•		•	
	ISODR K		<0.056		79.056	
	MEC6H MG	5	<2.199		/2.100	
	MIBK MKYLE	·r	12.900		+12.000	
	MA	•	<1.040		F. 146	
	NIT		•			
	OXAT PB		41.350		1 . Fire	
	PPELE		ું. લુક			
			0.153			
	304 T12275		5000.900 /1.756	ž .;	٠٠٠	
	TOLEE	•	2.759		1.15 2.169	
	TROLE		1. 1.			
	XYLEN ZN		1.540		1. 40	
	44.4		•		•	

DENVER SAND

4

WELL # 37317	AQUIFER DEN	SCREENED INTERVAL 51.2- 60.6	DIAMETER	BEDROCK DEPTH 31.1	BEDROCK LITHOLOGY SH	WQAQ 5			
	COMPOUND 111TCE 112TCE 11DCE 11DCLE 12DCLE ALDRN AS ETZ C6H6		QUARTER FY <1.090 <1.630 <1.850 <1.930 <2.070 <0.083 <2.500 <1.140	87 4TH	4TH QUARTER FY87 <1.090 <1.630 <1.850 <1.930 <2.070 <0.083 <2.500 <1.140				
	CA CCL4 CD CH2CI		<1.920 - <1.690 - <2.480		<1.920 <1.690 <2.480				
	CHCL3 CL CLC6H CLCAN	5	<1.980 56000.000 <0.083 <1.360 <0.152		<pre>&lt;1.880 61800.000 &lt;0.083 &lt;1.360 &lt;0.152</pre>				
	CPMS CPMSO CPMSO2 CR CU DBCP DCPD DIMP DITH DLCEN		<1.080 <1.980 <2.240		<1.980 <1.980 <2.240				
			<pre>&lt;0.130 &lt;0.310 &lt;10.500 &lt;1.500 &lt;0.054</pre>		<0.130 <0.100 <0.100 <1.590 <0.054				
	DMES DMMP ENGPN ET 1645 FD		71.160 715.200 70.060 1.700 1200.000		1.750 -16.300 -20.360 -0.427				
	HG ISODR K MBCKHS MG		2.100		0.456				
	MIBH MXYLEN NA NIT WAT		/12.200 /1.24v /1.450		*12.000 *.040				
	EB PPLET PPLET 304	4.2	79.79. He		1. 17 . 14 . 14 . 14 . 14				
	TIGATE TIGATE TROLE WYDEN DN		2. No. 0		3, 160 3, 160 3, 160 1, 160				

WELL # 37318		ENED CASING RVAL DIAMETER 50.7 4.0	BEDROCK DEPTH 27.0	BEDROCK LITHOLOGY SH	WQAQ 5	DENVER SAND 3
	COMPOUND	3RD QUARTER FY87	4TH	QUARTER FY	87	
	112TCE	<1.630		<1.630		
	11DCE	<1.850		<1.850		
	11DCLE 12DCLE	<1.930		<1.930		
	ALDRN	<2.070		<2.070		
	AS	<0.083 <2.500		<0.083		
	BTZ	<1.140		<2.500 <1.140		
	C6H6	<1.920		2.470		
	CA	•		•		
	CCL4 CD	<1.690		<1.690		
	CH2CL2	<2.480		•		
	CHCL3	(1.880		<2.480 5.510		
	CL	44300.000		39000.000		
	CL6CP	<0.083		<0.083		
	CLC6H5 CLDAN	<1.360		12.000		
	CEDAN	<0.152		<0.152		
	CPMSO	<1.080 <1.980		<1.080		
	CPMSO2	<2.240		<1.980 <2.240		
	CR	•				
	CU	•		•		
	DBCP DCPD	<0.130		<0.130		
	DIMP	<9.310 <10.500		<9.310		
	DITH	<1.590		<10.100 <1.590		
	DLDRN	/0.054		<0.054		
	DMDS	<1.160		<1.150		
	DMMP ENDRN	<15.200 <0.060		<16.300		
	ETC6H5	<0.969 <0.520		<0.960		
	FL	71000.000	,	<0.520 1000.000		
	HC					
	ISODR K	<0.056		<0.055		
	MEC6H5	.2.100				
	MG	•		/2.100		
	MIEK	<12.900		, 12. 100		
	MXYLEN	1.949		1.040		
	HA NIT	•				
	OXAT	1.350				
	FB	* • * * **** •		1.150		
	PELLE	5. 546		9.946		
	PERCT	1, 15%		1,050		
	304 Tiedoe	13999.900	31.	1000.000		
	1 1 1 1 1 1 1	<1.750		1.150		
	TROLE	2.760 1.310		2.750		
	XYLEN	1 • 2 · 4 · 5 · 6 · 6 · 6 · 6 · 6 · 6 · 6 · 6 · 6		/1.310 /1.340		
	ZN	• - 1		: • 기명인		

WELL # 37319	AQUIFER DEN	SCREENED INTERVAL 145.4-154.5	CASING DIAMETER 4.0	BEDPOCK DEPTH 29.0	BEDROCK LITHOLOGY SH	WQAQ 5:	DENVER SAND 6
	COMPITITE 111TC 11TC	INTERVAL 145.4-154.5 OUND 3RD CE CE ELE LE LE LE V	DIAMETER	DEPTH 29.0 4TH	LITHOLOGY	5:	SAND
	MIT OWAT PH PETOR						
	PRODUCT SOLD TILDERDE CYLEE TRODE MYLEM CM	232	50 50 20 20 20 20 20 20 20 20 20 20 20 20 20	* #	1.75 2.74 1.41 1.74		
			•		•		

WELL # 37320	SCRF AQUIFER INTE ALL 22.7-	RVAL DIAMETER	BEDROCK DEPTH 35.0	BEDROCK LITHOLOGY SS	WQAQ 1	DENVER SAND
	COMPOUND 111TCE 112TCE 11DCE 11DCLE 12DCLE ALDRN AS BTZ C6H6 CA CCL4 CD CH2CL2 CHCL3 CL	3RD QUARTER FY8		QUARTER FY	87	
	CL6CP CLC6H5 CLDAN CPMS CPMSO CPMSO2 CR CU DBCP	<0.070 10.000 <1.300 <4.200 <4.700 <5.960 12.100 <0.130		<0.070 <0.580 <1.300 <4.200 <4.700 <7.940 <0.130		
	DOPD DIMP DITH DLDRN DMDS DMMP ENDRN ETC6H5 FL HG	<pre>&lt; 9.310 21.500 &lt;1.100 &lt;0.060 &lt;1.800 &lt;15.200 &lt;0.052 &lt;1.280 &lt;1220.000 &lt;0.480</pre>		/9.310 18.900 /1.100 0.140 /1.800 (15.200 /0.052 /1.380 1220.000		
	ISODR K MECGH5 MG MIBK MXYLEN WA NIT WAT PB	<pre></pre>		0.060 3350.000 1.210 1.210 1.200 4.200 2.350 2.350 2.350		
	PFICE PFOOT 304 TICEE TOLEE TROLE XYLEN CM	7.3.00 7.55 70.77 413000,000 71.200 71.100 71.100 720.100		7		

			oooner,	LUL 1900			
WELL # 37321	AQUIFER DEN	SCREENED INTERVAL 64.0- 73.	DIAMETER	BEDROCK DEPTH 35.0	BEDROCK LITHOLOGY SS	WQAQ 5	DENVER SAND 4
	COMP 111T 112T 11DC 11DC 12DC ALDRI AS BTZ C6H6 CA	CE CE E LE LE	D QUARTER FY	787 4TH	QUARTER FY <1.090 <1.630 <1.850 <1.930 <2.070 <0.083 <2.500 <1.140 <1.920	87	
	CCL4 CD		<1.690		<1.690		
	CHCL3	!	<2.480 <1.380 16800.000		/2.480 /1.380 /1.300.000		
	GL6GP GLG6H GLDAN GPMS	5	<0.083 3.600 40.152 <1.080		< 0.083 2.980 < 0.152 < 1.080		
	CPMSO CPMSO CR CU		<1.980 <2.240		71.980 -2.240		
	DBOP LOPD LIMP DITH		<pre></pre>		49.130 49.310 -10.100		
	DITH DLDPM IMDS DMMP		<1.590 <0.054 <1.160 <30.400		<1.590 <0.054 <1.160 <15.300		
	ENDEN ET JAHS FL HG	· ·	70.050 70.520 71000.909		40.950 40.520 40.620		
	IRODR F		<0.056		·0.056		
	ME 1485 143		- 2.100		2.100		
	MIEE MKYLEN NA		/12.900 /1.040		istoria National		
	97.7 37.7 38.7 38.		•		•		
			· •				
	Tin ins	Ü	led ty og na 1. 25 m 2. 250	ر ئى	e de agrecia. Estados		
	TRILE MYLLN ZN		5 1 . 3 4 to		1. 10 1. 140		
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			, -	.02 1300			
WELL # 37322	AQUIFER DEN	SCREENED INTERVAL 87.8- 96.9	CASING DIAMETER 4.0	BEDROCK DEPTH 35.0	BEDROCK LITHOLOGY SS	WQAQ 5	DENVER SAND 5
	COMP 111T 112T 11DC 11DC	CE CE E	QUARTER FY <1.090 <1.630 <1.850 <1.930	87 4TH	QUARTER FY <1.090 <1.630 <1.850	87	
	12DC1 ALDR1 AS		<2.070 <0.083 <2.500		<1.930 <2.070 <0.083 <2.500		
. •	BTZ C6H6 CA CCL4		<1.140 <1.920		<1.140 <1.920		
	CD CH2CL	<b>n</b>	<1.690 _•		<1.690		
	CHCL3 CL CL6CP		<2.480 <1.880 17100.000		<2.480 <1.880 16600.000		
	CLC6H CLDAN	5	<0.083 7.740 <0.152		<0.083 <1.360 <0.152		
•	CPMS CPMSO CPMSO		<1.080 <1.980 <2.240		<1.080 <1.980 <2.240		
	CR CU		•				
	DBCP DCPD		<0.130 <9.310		<0.130 <9.310		
	DIMP DITH DLDRN		<10.500 <1.590 <0.054		<10.100 <1.590		
	PMDS DMMP ENDRN		<1.160 <15.200		<0.054 <1.160 <16.300		
	ETC5H5 FL		<0.060 <0.620 1000.000	,	<0.050 <0.620 1000.090		
	HG ISODR K		10.055		9.955		
	MECSHS MG		<2.100				
	MIEK MXYLEN NA		<12.900 -1.040		/13.000 /1.040		
	NIT OXAT		· . 1.350		•		
	PP PPIOE						
	PEDDT S04 T12DCE	.07	0.059	261	ojeća Odujeca		
	TPOLE TPOLE		71.750 2.760		1.750 2.760		
	ZN XYLEN		×1.310 ×1.340		1.310 (1.340		
			•		•		

				.02 .700			
WELL # 37323	AQUIFER DEN	SCREFNED INTERVAL 16.5- 26.3	CASING DIAMETER 4.0	BEDROCK DEPTH 10.0	BEDROCK LITHOLOGY SH	WQAQ 5	DENVER SAND 2
	COMP 111T 112T 11DC 11DC 12DC 12DC ALDRI AS BTZ	CE CE E LE LE	QUARTER FY <1.090 <1.630 <1.850 <1.930 <2.070 <0.083 <2.500	87 <b>4</b> TH	QUARTER FY <1.090 <1.630 <1.850 <1.930 <2.070 <0.083 <2.500	87	
	С6Н6 СА		<1.140 <1.920		<1.140 2.730		
	CCL4 CD	2	<1.690 		<1.690 •		
	CH2CL CHCL3 CL CL6CP CLC6H	3 	<2.480 36.700 38000.000 <0.083 <1.360	2	<2.480 42.000 286000.000 <0.083 15.500		
1	CLDAN CPMS CPMSO CPMSO CR		<0.152 <1.080 <1.980 <2.240		<0.152 <1.080 <1.980 <2.240	·	
	DBCP DCPD DIMP DITH DLDRN		.0.130 <9.310 15.700 <1.590 <0.054		0.164 79.319 76.609 (1.590		
	DMDS DMMP ENDRN ETC6H5	5	70.954 71.160 715.200 70.060 70.620 2310.000		.0.054 .1.160 .15.300 .0.060 .9.620 .2770.000		
	HG ISODR K		.457		0.486		
	 МЕСЭН5 МС		2.100		.2.100		
	MAYLEN MXYLEN MISK		112.439 21.040		12.000		
	MIT OKAT EB		1				
	PELLE FELUT 304	ن :	A STATE OF THE STA	1:4:			
	TIMES	J	1,750 3,750 1,750		1.150 2.100 1.110		
	EN EN		* : ** * : **		4 . + \$99		

WELL # 37327	AQUIFER ALL	SCREENE INTERVA 29.6- 34	L DI	ASING AMETER 1.0	BEDROCK DEPTH 34.9		ROCK OLOGY H	WQAQ 1	DENVER SAND
	COMPO	_		RTER FY87	4 T	'H QUAR'	TER FY	3 7	
	111T( 112T(			1.090		<	1.090		
	1 1 DCE			1.630 1.850			1.630		
	11DCI	Æ		1.930			1.850 1.930		
	12DCI		<	2.070			2.070		
	ALDRN AS			0.083			0.083		
	BTZ			2.500 1.140			2.500		
	C6H6			1.920			.140 .920		
	CA					\ 1	. 920		
	CCL4 CD		<	1.690		< 1	.690		
	CH2CL	2	,	2.480		!	•	•	
	CHCL3			1.880			.480		
	CL		25700	0.000		250000	.880		
	CL6CP	-	<	0.083			.083		
	CLC6H CLDAN	5		1.360			.080		
	CPMS			0.152 1.080			.152		
	CPMSO			.980			.080 .980		
	CPMSO:	2		2.240			.240		
	CR CU			•			•		
	DBCP		۲ ۶	. 130		. 0	•		
	DCPD			.310			.130 .310		
	DIMP		< 10	.500			.100		
	DITH DLDRN			.590			. 340		
	DMDS			.054			.054		
	DMMP			.200		(15.	. 160 300		
	ENDRN		< 0	. 060			. 300 . 300		
	ETC6H5 FL			.620		€0.	629		
	HG		2700	• 909		2670.	000		
	K ISODR		z tj	.955		٠ ŋ .	056		
	MEC6H5 MG		12	. 190			100		
	MIBK		. 5	500		12.	Arres		
	MKYLEN NA			. 149		. 1			
	HIT		•						
	OWAR			y 5 a					
	PB								
	PPEDE PPEDT			* *			( <b>; .</b> .		
	304	•	 .:90093.	S .			· · · · · ·		
	TIRDCE			75 Ŋ	; _	99990. 	252 150		
	TOLEE		٠. •	7.50					
	TROLE			7.17.		1.	-		
	XYLEN ZN	,		340		5 F.	44.9		•
	٠.٠		•						

WELL # 37330	AQUIFER ALL	SCREE INTER 37.5-	VAL	CASING DIAMETER 4.0	BEDROCK DEPTH 57.0	BEDROCK LITHOLOGY SH	WQAQ 1	DENVER SAND
	COMPO 111TC 112TC 11DCE 11DCL 12DCL ALDRN AS ETZ C6H6 CA	E E E E	3RD	QUARTER FY8 <1.090 <1.630 <1.850 <1.930 <2.070 <0.083 <2.500 <1.140 <1.920	7 4TF	QUARTER FY <1.090 <1.630 <1.850 <1.930 <2.070 <0.083 <2.500 <1.140 <1.920	87	
	CCL4 CD CH2CL	2		<1.690 <2.480		<1.690		
	CHCL3 CL CL6CP CLC6H1 CLDAN		29	18.100 91000.000 <0.083 2.690 <0.152	<u>3</u>	<2.480 17.200 319000.000 <0.083 1.740 <0.152		
	CPMS CPMSO CPMSO2 CR			<1.080 <1.980 <2.240		<1.080 <1.980 <2.240		
	DBCP DCPD TIMP DITH DLDRN			<pre>&lt;0.130 &lt;9.310 10.500 &lt;1.590 &lt;0.054</pre>		<pre>&lt;0.130 &lt;9.310 10.100 &lt;3.340 &lt;0.051</pre>		
	DMDS DMMP ENDRN ETCSHS FD			7.150 730.160 70.960 9.620		70.054 71.160 716.300 70.060 70.620		
	HG IGODR K MB NGHS			9.75F		1520.000 -0.056		
	MG MIRK MIRK MA			2. tog vittinan vitte		· 2.300 · 12.300 · .340		
	MIT WAT FA			: : : : : : : : : : : : : : : : : : : :		•		
	FF11E FF11T 3.4 T131/E		5.4	. 18 . 54 20 . 200 1.75	· •	7. (40) 1. (5.) 3. (15.) 1. 75.)		
	THLES TRALS MYLON CN			11.760 21.340 3.342		1.340 1.340 1.340		

WELL # 37331	AQUIFER I	CREENED NTERVAL .6- 48.6	CASING DIAMETER 4.0	BEDROCK DEPTH 48.0	BEDROCK LITHOLOGY SH	WQAQ 1	DENVER SAND
	COMPOUNT	D 3RD	QUARTER FYS	37 4T	H QUARTER FY	87	
	111TCE		<1.090		<1.090		
	112TCE 11DCE		<1.630		<1.630		
	11DCLE		<1.850 <1.930		<1.850		
	12DCLE		<2.070		<1.930		•
	ALDRN		<0.083		<2.070		
	AS		<2.500		<0.083 <2.500		
	BTZ		<1.140		<1.140		
	С6Н6		<1.920		<1.920		
	CA		•				
	CCL4		<1.690		<1.690		
	CD CH2CL2				•		
	CHCL3		<2.480 25.800		<2.480		
	CL CL	. 32	7000.000		19.900		
	CL6CP	52	<0.083		338000.000 <0.083		
	CLC6H5		6.590		1.660		
	CLDAN		<0.152		<0.152		
	CPMS		<1.080		<1.080		
	CPMSO		<1.980		<1.980		
	CPMSO2 CR		<2.240		<2.240		
	CA		•		•		
	DBCP		<0.130		<0.130		
	DCPD		(9.310		49.310		
	DIMP		<10.500		<10.100		
	DITH		<1.590		<3.340		
	DLDRN DMDS	·	<0.054		<0.054		
	DMMP		<1.160 <15.200		<1.160		
	ENDRN		10.060		<16.300		
	ETC6H5		(0.520		<0.060		
	FL		1730.000		70.520 1560.000		
	HG		•				
	ISODR K		<0.956		79.956		
	MECSH5 MG		<2.100		72.100		
	MIBK		(12.30n		12.200		
	MXYLEN		1.040		1.040		
	MA		•				
	NIT		•		•		
	OKAT PB				1. 5.		
	PPDDE		3. *17		•		
	PERMI		**************************************				
	304	160	 ეტი. მით	1	78000.000		
	TIODE		15	,	75000.000		
	POLEE		12.760		2.280		
	TROLE		· 1.310		1.310		
	KYLEN CN		-1.340		1.549		

WELL # 3,7332	AQUIFER ALL	SCREE INTER 46.9-	RVAL	CASING DIAMETER 4.0	BEDROCK DEPTH 51.0	BEDROCK LITHOLOGY SH	WQAQ 1	DENVER SAND
	COMP( 111T( 112T(	CE	3RD	QUARTER FY8 <1.700 <1.000	7 41	TH QUARTER FY	87	
	11DCI			<1.100		<1.000		
	11DCI			<1.200		<1.100 <1.200		
	12DCI			<0.610		<0.610		
	ALDRN AS	ı		<0.070		<0.070		
	BTZ			4.500		5.800		
	C6H6			<2.000 <1.340		<2.000		
	CA		1	16000.000		<1.340		
	CCL4			<2.400		96799.000 <2.400		
	CD			<5.160		5.470		
	CH2CL			<5.000		<5.000		
	CHCL3		-	<1.400		3.390		
	CL6CP		/	14000.000		609000.000		
	ILC6H	5		<0.070 <0.580		<0.070		
	CLDAN					3.220		
	CPMS			<1.300		<1.300		
	CPMSO CPMSO:	•		<4.200		<4.200		
	CR CR	۷		<4.700		<4.700		
	ζΰ			<5.960 <7.940				
	DBCP			7.940 70.130		41.300		
	DOPD			49.816		<0.130 <9.310		
	SIMP			/19.500		19.500		
	DITH DLDPN			1.109		(1.100		
	DMUS			0.711		1.020		
	LMMP			- 1.890 - 415.200		<1.800		
	ENDEN			70.052		<15.200 <0.052		
	ETC6H5			(1.280		<1.280		
	FL HG			2549.000		2510.000		
	ISOUR			<0.249 (0.259)		<0.480		
	7			3.73.mm		<0.060 3780.000		
	전된 가면하			· 1.11		1.210		
	MG MEBK		5.70	1.47		34200.300		
	MXYLEN			/12.909 1.156		<12.50m		
	NA		300	363.55		50		
	NIT				`	gganga jaga Assignari		
	XA.,							
	IH IIIIE			* • •		3.		
				•				
			. 7.			÷ ***		
	7:25:18				2	y kangganta		
	A Company			•		\$.209 5.309		
	TRILE					1.100 1.100		
	KYLEN			· · · · · · · · · · · · · · · · · · ·		2.479		
	24			31.000		54.900		

WELL # 37333	AQUIFER ALL	SCREE INTER 38.4-	VAL	CASING DIAMETER 4.0	BEDROCK DEPTH 47.0	BEDROCK LITHOLOGY SH	WQAQ 1	DENVER SAND
	COMPO	DNDC	3RD	QUARTER FY8	7 4 ጥነ	H QUARTER FY	.07	
	111T(	CE		<1.700	, 411	1.700 × 1.700	87	
	112TC			<1.000		<1.000		
	11DCE			<1.100		<1.100		
	11DCI			<1.200		<1.200		
	12DCI			<0.610		<0.610		
	ALDRN AS	l		<0.070		<0.070		
	BTZ			<3.070		4.800		
	C6H6			<2.000		<2.000		
	CA			<1.340 80100.000		<1.340		
	CCL4			<2.400		85700.000		
	CD			<5.160		<2.400 <5.160		
	CH2CL	2		<5.000		<5.000		
	CHCL3			13.500		11.600		
	CL		3	94000.000		372000.000		
	CL6CP	_		<0.070		< 0.070		
	CLC6H CLDAN	<b>ɔ</b>		<0.580		<0.580		
	CPMS			<1.300		•		
	CPMSO			<4.200		<1.300		
	CPMSO2	2		<4.700		<4.200		
	CR			<5.960		<4.700		
	Cü			<7.940		47.940		
	DBCP			<0.130		<0.130		
	DCPD			(9.31)		(9.310		
	DIMP DITH			<10.500		10.500		
	DLDRN			<1.100		<1.100		
	DMDS			0.205 <1.300		0.226		
	DMMP			<15.200		71.800 715.200		
	ENDRN			<0.052		10.052		
	ETC6H5			<1.280		1.280		
	FL		•	1220.000		/1229.000		
	HG			< 0.240		430		
	ISODR K			70.060		0.350		
	MECCHS			4740.000 71.210		5580.000		
	MG		1 1	9500.000		.1.210		
	MIEK			<12.900		13300.000		
	MXYLEN			1.350		<12.900 <1.250		
	MA		3	3000.300	3	-		
	HIT	•		3336.000	2	2029.000		
	OXAI			2.660		2.3		
	58 58			13.599		* * * ****		
	FFILE PFSLT			3.4.33		9.053		
	304		7	1.079		0.076		
	TIZDEE		2/	000.000 71.200	1 5	Buddi dun		
	7.7			1 1 • 4 777 1 • 2 44.		1.200		
	TRALE			1.1)0		1.740		
	XYLEM			2.476		1.100		
	ZN			/20.100		33.600		
						72.000		

WELL # A0	QUIFER IN'	REENED TERVAL 3- 67.3	CASING DIAMETER 4.0	BEDROCK DEPTH 64.0	BEDROCK LITHOLOGY SH	WQAQ 2	DENVER SAND
	COMPOUND 111TCE 112TCE 11DCE 11DCLE 12DCLE ALDRN AS BTZ C6H6	3RD	QUARTER FY83 <1.090 <1.630 <1.850 <1.930 <2.070 <0.083 <2.500 <1.140 <1.920	7 4TH	QUARTER FY <1.090 <1.630 <1.850 <1.930 <2.079 <0.083 <2.500 <1.140 <1.920	87	
	CA CCL4 CD CH2CL2		<1.690		<1.690 •		
	CH2CL2 CHCL3 CL CL6CP CLC6H5 CLDAN	,	<2.480 <1.880 72000.000 <0.083 3.710 <0.152		<2.480 (1.880 76900.000 (0.083 2.310 (0.152		
	CPMS CPMSO CPMSO2 CR CU		<1.080 <1.980 <2.240		<1.080 <1.980 <2.240	.,	
	DBCP DCPD DIMP DITH DLDRM		70.130 79.310 710.500 71.500 9.160		<pre>&lt; 0.130 &lt; 9.310 &lt; 10.100 &lt; 3.340</pre>		
	OMDUS DMMP ENDRN ETTGHS FD	,	<pre>/1.160 &lt;30.400 /0.060 /0.400 /0.400 <pre>/0.400</pre></pre>		*1.160 *16.300 *0.060 *0.920 1000.300		
	HG ISODP F MERKHS		(0.050 (3.100		(0.056		
	MA MIBK MAYLEN MA		12.300		<2.100 <12.900 <1.040		
	MIT OKAT PB EECCE		1. (50)		: :		
	FREET 804 Tradge	+4	1. 41 11. 115 31. 11. 1111 1.75	••• ,	7. 1.1 7. 1.1 11. 11. 11. 11. 11. 1. 751		
	TOLEE TROLE Mylen CM		2.700 1.20 1.34		2.360		

		SCREENED	CACTAG	•					
WELL #	AQUIFER	INTERVAL	CASING DIAMETE		BEDROC DEPTH		BEDROCK LITHOLOGY	( (10) 0	DENVER
37335	ALL	38.2- 57.6	4.0		51.0		SH	QAQW 3	SAND
	COMP	ממנ מעוור	OULDERED	51105					
	11117		QUARTER <1.70		•	4TH	QUARTER F		
	112T		<1.00				<1.700		
	11DC		<1.10				<1.100		
	11DCI		<1.20				<1.200		
	12DCI ALDRN		< 0.61				(0.610		
	AS		<0.07				<0.070		
	BTZ		<2.00				<3.070		
	C6H6		1.74				<2.000 <1.340		
	CA		69800.00	0		(	67400.000		
	CCL4 CD		(2.40				<2.400		
	CH2CL	2 .	(5.16)				5.470		
	CHCL3		<5.000				<5.000		
	CL	1	12000.000			1 1	(1.400		
	CL6CP		<0.070				<0.070		
	CLC6H CLDAN	5	8.550	)			1.650		
	CLUAN		(1.200				•		
	CPMSO		<1.300 <4.200	<i>;</i> 1			(1.300		
	CPMS0:	2	<4.700				<4.200 <4.700		
	CR		<5.960				. 4.700		
	CU DBCP		<7.940				<7.940		
	DCPD		<0.130				₹0.130		
	DIMP		<10.500				<9.310 -10.500		
	DITH		<1.100				<1.100 <1.100		
	DLDRN DMDS		0.065				0.328		
	DMMP		<1.800 <15.200				71.800		
	ENDRN		<0.052				415.200		
	ETC6H5		/1.280				70.052 1.290		
	FL	< <	1220.000				1220.000		
	HG ISODR		<0.240				< 0.480		
	X X		0.060 0.000			-	0.050		
	MEC6H5	•	1.210			-	1.21n 1920.30n		
	MG	1	3600.000			: 3	200.220		
	MIBK MXYLEN		- 12.300				412. On		
	MA LUEN	27	71.350 1900. Ngg				/1,150		
	NIT	2.3	255.000				200 m. See a		
	133.0		4						
	PB PPMLE		113.500				18.500		
	PPDDT		7.05±				*. * * *		
	304	5.1	9.976 400.006			ε,	3. 7m		
	TIZDCE	3.4	11.200			. ا ت	ong.syn 1.jhu		
	TOLEE		41.300				1.344		
	TROLE		-1.100				1. 100		
	XYLEN Zn		2.470				- 2.479		
	٥		39.800				21.400		

WELL # 37336	AQUIFER ALL	SCREENE INTERVA 19.3- 38	L DIAMETER	BEDROCK DEPTH 39.0	BEDROCK LITHOLOGY SH	WQAQ 1	DENVER SAND	!
	COMPO 111TO 112TO 11DCE 11DCE 12DCE ALDRN AS BTZ	CE CE LE LE	RD QUARTER FY <1.090 <1.630 <1.850 <1.930 <2.070 <0.083 <2.500 <1.140	'87 4TH	QUARTER FY <1.090 <1.630 <1.850 <1.930 <2.070 <0.083 <2.500 <1.140	87		1
	C6H6 CA CCL4 CD CH2CL	2	<1.920 <1.690 <2.480		<1.920 <1.690 <2.480			1
	CHCL3 CL CLC6H CLCAN	5	0.230 225000.000 <0.083 6.910 <0.152	2	5.410 226000.000 <0.983 2.520 <0.152			•
	CPMS CPMSO CPMSO CR CU		<1.080 <1.980 <2.240		<1.030 <1.980 <2.240			,
	DBCP DCPD DIMP DITH DLDRN DMDS		<pre></pre>		<pre></pre>			,
	DMMP ENDPN ETCHHS PL HG	5	15.200 -0.060 -0.620 1360.000		11.160 116.300 10.060 10.620 1590.000			
	ISODR K MECGHS MG MIEK		0.956 		2.199			•
	MMYLEM MA MIT MAT PB		1,040		1.040 1.040			,
·	PRICE PROCT SO4 TIBUTE TOLEE			1.2	12 			,
	TROLE XYLEN CM				2.760 -1.310 1.340			

WELL # 37340

AQUIFER ALL	SCREE INTER 23.5-	RVAL	CASING DIAMETER 4.0	DEPTH LITHOLO		WQAQ I	DENVER SAND
COMPO	מאוזכ	380	QUARTER FY87	7 100	71 A113 DEED		
11110		31.0	<1.700	41	H QUARTER FY	87	
112TC			<1.000		<1.700		
11DCE	3		<1.100		<1.000		
11DCI	Æ		<1.200		<1.100 <1.200		
12DCL	E		<0.610		<0.610		
ALDRN	Ī		•		<0.070		
AS			•		⟨3.070		
BTZ			•		<2.000		
C6H6			<1.340		<1.340		
CA			•		149000.000		
CCT4			<2.400		<2.400		
CD	_		•		<5.160		
CH2CL			<5.000		<5.000		
CHCT3			<1.40ù		/1.400		
CL	,		•		220000.000		
CL6CP			•		<0.070		
CLC6H	כ		<0.580		/0.580		
CLDAN CPMS			•		•		
CPMSO			•		41.300		
CPMS02	2		•		<4.200		
CR	<b>-</b>		•		<4.700		
ÇÜ			•				
DBCP			<0.130		₹7.940		
DOPD			10.130		70.130		
DIMP			•		<0.310		
DITH			•		35.300		
DLDEN			•		1.100		
SMDS					70.060 1.800		
DMMF			•		<15.200		
ENDRN					2.164		
ETC6H5			11.280		1.280		
F1			•		:739.000		
HG			•		0.480		
ISCDR K			•		0.950		
MEGGHS					4200.000		
MG MG			1.210		· 1.210		
MIBK			•		45361.300		
MXYLEN			• • • • • • • • • • • • • • • • • • • •		· ) ibn		
NA			<1.250		1, 250		
NIT			•	•	The Assessment of the Control of the		
BXAT			•		14.5		
PF			•		• *****		
PPRDE			•				
PEDET			•		• •		
304			•		e entre e regel		
712578			٠٠.٠		***		
7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7			1, 100				
TRULE			1.100		1. ( 10)		
KYLEM			.2.173		71		
CM			•		11.600		
					• • • • •		

AQUIFER ALL	SCRETINTED	RVAL	CASING DIAMETER 4.0	BEDROCK DEPTH 20.0	BEDROCK LITHOLOGY SH	WQAQ 1	DENVER SAND
COMPO	UND	3RD	QUARTER FY8	7 <u>/</u> 1	TH QUARTER FY	07	
111170		3	<1.700	, 4.	11.700 ×1.700	8 /	
112TC	E		<1.000		<1.000		
11DCE			<1.100		<1.100		
IIDCL			<1.200		<1.200		
12DCL			< 0.610		<0.610		
ALDRN			<0.070		<0.070		
AS BTZ			<3.070		3.500		
C6H6			<2.000		<2.000		
CA		5	<1.340 37000.000		(1.340		
CCL4		,	<2.400		668000.000 <2.400		
CD			<5.160		9.500		
CH2CL:	2		<5.000		<5.000		
CHCL3			<1.400		<1.400		
CL		20	20000.000		1990000.000		
CL6CP CLC6H5			<0.070		<0.070		
CLDAN	,		<0.580		<0.580		
CPMS			<1.300		<1.300		
CPMSO			<4.200		(4.200		
CPMSO2	<u>!</u>		<4.700		44.700		
CR CH			<5.960		•		
DBCP DBCP			<7.940		9.820		
DCPD			<0.130 <9.310		< 0.130		
DIMP			515.000		<9.310 546.000		
DITH			<1.100		<1.100		
DLDRN			<0.060		0.128		
EMDS			1.300		/1.300°		
DMMP ENDRN			<15.200		476.000		
ETC6H5			<0.052 <1.280		< 0.052		
FL	•		1230.000		/1.280 4650.000		
HG			(0.240		0.430		
ISODR 			(D.960		0.060		
K MEGSHS			3510.000		3510.000		
MG MG		1.0	7090.900		-1.210		
MIBK			/12.900		174000.000 \ 		
MXYLEN			11.350		714.200		
NA		1 . 4.	igan, han		<u>jjanes į kar</u>		
NIT		*	1230.000		Sychology Comme		
OKAT PB			4.790				
PEDDE			(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)				
PPLLT			1.1153 3.970				
304		19	000.166		eri erre erre erre erre erre erre erre		
TIZDÇE			1.200		1.200		
TALES					1		
TRALE			7. t. 190		1.100		
MYLEM Zn			-2.47:		2.470		
€، ت			93.900		152.000		

WELL # 37339

WELL # 37341	AQUIFER ALL	SCREENED INTERVAL 20.3- 50.7	CASING DIAMETER 4.0	BEDROCK DEPTH 48.0	BEDROCK LITHOLOGY SS	WQAQ 2	DENVER SAND
	COMP 111T 112T 11DC 11DC 12DC ALDRI	CE CE E LE LE	QUARTER FY8 <1.700 <1.000 <1.100 <1.200 <0.610 <0.070	7 4TH	QUARTER FY <1.700 <1.000 <1.100 <1.200 <0.610 <0.070	87	,
	AS BTZ C6H6 CA CCL4 CD		<pre></pre>		<3.070 <2.000 <1.340 70500.000 <2.400		
	CH2CL CHCL3 CL CL6CF CLC6H CLCAN	5	<5.000 <1.400 47500.000 <0.070 2.420		<5.160 <5.000 <1.400 50500.000 <0.070 0.807		
	CPMS CPMSO CPMSO CR CU		<1.300 <4.200 <4.700 <5.960 <7.940		<1.300 <4.200 <4.700		
	DBCP DCPD DIMP DITH DLDRN DMDS		<0.130 <9.310 <10.500 <1.100 <0.060		<pre></pre>		
	DMMP ENDRN ETC6H' FL HG ISODR	5	<30.400 <0.052 <1.280 1223.900 1,330	•	/15.200 /0.052 /1.280 1221.400 /0.240		
	HECSHS MECSHS MG MIBK MXYLEN	,	0.050 1280.000 1.217 3170.000 112.400 21.350		0.060 4640.200 1.210 5500.000 -1000 -1.350		
	MA MIT DWAT PB PAILE	·	3700,000 725,000 2.100 3.050	i.	1803 Line (12 June (13 June (13 June (14 June)		
	PFILT S14 T10DQB T0UBB TPOUB KYIBM	* 4	9,477 Ethiology 1,200 1,200 (1,10) 2,170	*27	1.26 1.26 1.26 2.39		
	ËN		-20.139		3.479 48.200		

DENVER SAND

WELL # 37342	AQUIFER ALL	SCREET INTER	VAL	CASING DIAMETER 4.0	BEDROCK DEPTH 27.5	BEDROCK LITHOLOGY SH	WQAQ 1		
	COMP(		3RD	QUARTER FY87	4TF	QUARTER FY	87		
	112T(			<1.000		<1.000			
	11DCE 11DCE			<1.100		<1.100			
	12DCI			<1.200 1.470		<1.200			
	ALDRN			<0.070		1.110 <0.070			
	AS			<3.070		<3.070			
	BTZ C6H6			<2.000		<2.000			
	CA CA		3	<1.340 11000.000		<1.340			
	CCL4		J	<2.400		287000.000 <2.400			
	CD			(5.160		5.470			
	CH2CL	2		<5.000		<5.000			
	CHCL3		z ·	71.400		71.400			
	CL6CP		3	76000.000 -0.070	:	86000.000			
	CLC6H	5		/0.580		<0.070 <0.580			
	CLDAN			•					
	CEMS			-1.306		-1.300			
	CPMSQ CPMSQ2			/4.200 /4.700		(4.200	•		
	CR	-		- 5.960		44.700			
	on .			/7.54n		7.940			
	DBCP		79.139			<0.130			
	DOFD DIMP		(9.216 11.16			(9.310			
	DITH					14.000 41.100			
	DLDRN			ના કું. અને ફોલા જો		0.050			
	DMDS			: <u>1</u>	- 1.50 <u>0</u>				
	DMMP ENDRN			<pre>415.240 44.352</pre>	/15.200				
	ETCERS				. 0.052 1.200				
	FL			1460. To	151 . 000				
	HG ISODR			* • • •		5 . A F 13			
	K SUSER								
	MERKHE					5500.000 1.20			
	***		: :	1900 - 200	,	5700.000			
	MIBK MKYLEN			·		1 - 1 (+ f)			
	11.00 E E E E E E E E E E E E E E E E E E		1	• • • • • • • • • • • • • • • • • • • •	• •	* * * * * et			
	HIT				•	Control of the Contro			
	XAT			•					
	i i i i i i i i i i i i i i i i i i i			·		•			
				•					
				•	** **				
	TIBLEE			• • •					
	TRUSE								
	17 55 77573					1.1000			
	<del>-</del> -			** * * *		20.100			

COMPOUND 3RD QUARTER FY87 4TH QUARTER FY87 111TCE	WELL # 37343	AQUIFER	SCREENED INTERVAL 3.7- 35.1	CASING DIAMETER 4.0	BEDROCK DEPTH 05.5	BEDROCK LITHOLOGY SH	WQAQ 1	DENVER SAND
111TCE		COMPOU	IND 3RD	QUARTER FYS	37 4т	H OHARTER FY	87	
112TCE		111TCE	•		••		0 /	
TIDCLE								
12DCLE						<1.100		
ALDRN (0.070								
AS 3.900 4.300 BTZ (2.000 (2.000) C6H6 (1.340 (1.340) CA 144000.000 119000.000 CCL4 (2.400 (2.400) CD (5.160 (5.160) CH2CL2 (5.000 (5.160) CH2CL3 (1.400) (1.400) CL (1.333000.000) 223000.000 CHCL3 (1.400) (1.400) CL (1.300) (1.400) CL (1.300) (1.400) CL (1.300) (1.300) CL (1.300) (1.300) CL (1.300) (1.300) CPMS (1.300) (1.300) CPMSO (4.200) (4.700) CPMSO (4.200) (4.700) CR (5.960) 11.100 CR (1.300) (1.300) CPMSO (4.200) (4.700) CR (5.960) 11.100 CR (1.300) (4.700) CR (1.300) (4.7								
BTZ								
C6H6 (1.340 (1.320) CA 144000.000 119000.000 CCL4 (2.400 (2.400) CD (5.160 (5.160) CH2CL2 (5.000 (5.160) CHCL3 (1.400 (1.400) CL 333000.000 (23000.000) CL6CP (0.770 (0.070) CL6CP (0.770 (0.070) CL6CH5 (8.930 (0.070) CL0AN (1.300 (1.300) CPMSO (4.200 (4.200) CPMSO (4.200 (4.200) CPMSO (4.700 (4.700) CR (5.660 (11.100) CR (5.660 (11.100) CD (1.300 (1.300) CPMSO (4.700 (4.700) CPMSO (4.700) CPM								
CA 144000.000 119000.000		C6H6						
CD			1	44000.000				
CH2CL2						<2.400		
CHCL3 CL 333000.0000 223000.0000 CL6CP								
CL 333000.000 223000.000 CL6CP	•							
CL6CP CLCSHS CLDAN CLMS CLDAN CPMS CLMSO CPMSO CPMSO2 C4.700 C7.00 C8 C5.960 C11.100 C9			3					
CLC6H5 CLDAN CPMS CPMS CPMS CPMSO CP		CL6CP						
CPMSO				8.930				
CPMS0						•		
CPMSO2								
CR								
CU 25.700	ı							
DBCP								
DIMP 966.000 468.000 DITH 1.830 1.900 DLDRN 60.060 20.060 DMDS 71.300 (1.800 DMMP (152.000 (76.000 ENDRN 70.052 (0.052 ETC6H5 (1.280 (1.280) FL 1600.000 1750.000 HG 70.240 (0.480) ISODR 71.660 (0.080) K 4590.000 5580.0000 MEC6H5 1.210 (1.210 MG 54000.300 580.0000 MIEK 12.900 (1.200) MIEK 12.900 (1.200) MIEK 12.900 (1.200) MIT 170.000 MIT 170.000 NIT 17								
DITH								
DLDRN								
DMES								
DMMP				11.300				
ETC6H5								
FL 1600.000 1750.000  HG								
HG				1600 300				
ISODR								
## 4590.000								
MG 54000.000 5000.000 MIEK 12.900 11.350 MXYLEN 21.350 NA 270003.000 350003.000 NIT 100.00 PR 15.00.00 PRDE 15.00.00 PRDDT 0.07 0.070 304 428300.00 TOLEE 11.300 1.000 TPOLE 11.300 1.000 MYLEN 3.000 TOLEE 11.300 1.000 MYLEN 3.000								
MIEK 12.800 /1.000 MXYLEN /1.350 /1.350 NA 270003.000 /50003.000 NIT /0.00  OXAT // // // // // // PB // // // // // // // // PFCDE // // // // // // // // // // PFCDT // // // // // // // // // // // // //			-					
MXYLEN 21.350 11.350 NA 270003.000 350003.000 NIT 100.31  98 15.63 1.00  9PCDE 1.54 1.55  PPCDT 6.97 9.070 364 423362.10 155000.000 T12DGE 71.200 1.200 TPCLE 71.302 1.000 MYLEN 2.10			2			ខ្មុំដូច្រាំ ស្រែក		
NA 270003 000 35000 35000 000  NIT 100 01  PR 15.61 1.00  PPEDE 15.61 1.00  PPEDT 6.17 0.070  364 428362.10 355000.00  T12DGE 71.200 1.200  TPGLE 71.300 1.000  MYLEM 0.17								
MIT 100.000  OMAT 2.00 2.000  PB 15.000 2.000  PPLDT 0.07 0.070  304 428362.10 355000.000  T12DCE 41.200 1.200  TCLEE 41.200 1.200  TPCLE 41.100 41.100  MYLEM 2.17		NA	2.7					
### 15.86   15				Francisco	•			
######################################								
PRIDT 6.97 0.076  304 943300.50 355000.500  T12DCE 71.200 1.200  TCLEE 71.200 1.300  TPCLE 71.100 71.100  MYLEM 0.117								
364 928369.99 355000.000 T12DCE 71.200 TCLEE 71.300 1.300 TCLE 71.100 71.100 MYLEM 20.17				- · ·		- '		
T12DCE				*		• •		
TODES 1.300 1.300 1.300 1.300 TROLE 1.300			7-2					
TROLE  KYLEM  (4.10)  (4.17)  (4.17)		TOLEE				<del></del>		
		TROLE		< 1.100				
24.409								
		انب		24.499		$\cdots$ $5 \cdot 3 \cdot (it)$		

DENVER

SAND

WELL # 37344	AQUIFER ALL	SCREE INTER 15.5-	VAL	CASING DIAMETER 4.0	BEDROCK DEPTH 42.0	BEDROCK LITHOLOGY SS	WQAQ 2
		INTER 15.5- OUND CE CE E LE LE 2	VAL 40.9 3RD	DIAMETER 4.0  QUARTER FY8* <1.700 <1.000 <1.100 <1.200 13.700 <0.070 <2.000 1.720 77000.000 9.880 <5.160 <5.000 1370.000 32000.000 <0.070 6.530 . 3.290 110.000 <4.700 <5.960 22.100 10.600 <6.960 <2.100 1160.000 <1.100 <1.100 <1.300 <380.000	DEPTH 42.0 7 4T	LITHOLOGY SS  H QUARTER FY (17.000 (1.000 (1.100 (1.200 (2.000 (1.340 (1	2
			48	2380.000 20.052 21.280 23.50.000 20.480 21.000 21.200 2	4.	- "	

WELL # 37345

COMPOUND   3RD QUARTER FY87		JIFER ALL	SCREE INTER 16.4-	RVAL	CASING DIAMET		BEDROCI DEPTH 37.5		BEDROCK LITHOLOG SH		WQAQ 1	DENVER SAND
112TCE				3RD	QUARTER	FY87		4TH	QUARTER			
TIDCE												
11DCLE			_									
12DCLE			Ε									
ALDRN												
AS (3.070 3.100 BTZ (2.000 (2.000) C6H6 (1.340 (1.340) CA 74700.000 83000.000 CCL4 (2.400 (5.160) CD (5.160 (5.160) CH2CL2 (5.000 (5.160) CH2CL3 (1.409 (1.400) CL (5.000) (6.500) CHCL3 (1.409 (1.400) CL (5.000) (6.500) CL6CP (0.070 (0.070) CL6CH5 (0.580 (0.580) CLDAN (1.300 (1.300) CPMSO (4.200 (4.200) CPMSO (4.200 (4.200) CPMSO (4.700 (4.700) CR (5.960 (7.630) CU (7.940 (7.940) DBCP (0.130 (0.130) DDMF (10.500 (0.130) DDMF (10.500 (1.300) DDMF (1.100) DDMH (1.100 (1.100) DDMH (1.100) DDMH (1.100) DDMH (1.100) DDMMP (15.200 (1.300) DMMP (1.300) (1.300) DMMP (15.200 (1.300) DMMP (1.300) (1.300) DMMP (1.300) (1.300) DMMP (1.300) (1.300) DMMP (1.300) (1.300) DMMP (15.200 (1.300) DMMP (1.300) (1.3		ALDRN								-		
BTZ		AS										
C6H6 CA 74700.000 83000.000 CCL4 (2.400					< 2.00	0						
CCL4						_			<1.340	)		
CD								8				
CH2CL2												
CHCL3			,									
CL 52000.000 60500.000 CL6CP			•									
CL6CP												
CLC6H5 CLDAN CLDAN CPMS												
CLDAN CPMS			,									
CPMSO					•					•		
CPMSO2					<1.30	0			<1.300	<b>,</b>		
CPMSO2												
CU							•		<4.700	:		
DBCP (0.130												
DCPD												
DIMP (10.500												
DITH												
DLDRN       < 0.060												
LMES       <1.800		DLDRN										
ENDRN					<1.800	)						
ETC6H5									<15.200			
FL 1270.000 1240.000  H/G												
HG												
ISODR												
K 1660.000 3180.000 MEC6H5 1.210 1.210 MG 16200.000 17900.000 MIBK 12.900 12.000 MXYLEN 1.350 12.000 NIT 688.000 17500.000 NIT 568.000 12.000 IS 18.000 12.000 IS 18.000 12.000 IS 18.000 12.000 TILDE 0.053 1.000 TILDE 1.300 12.000 TILDE 1.300 1.300 TYCLE 1.300 1.300 TYCLE 1.100 1.100 XYLEN 12.470 12.470												
MEC6H5												
MIEK (12.900 12.000 MXYLEN (1.350 7550.000 75500.000 MXYLEN (1.350 75500.000 75500.000 MIT 568.000 44.100 75500.000 FELDE 0.053 75500.000 FELDE 0.053 75500.000 FELDE 1.000 1.000 FELDE 1.200 1.200 FELDE 1.200 I.200 FELDE 1.200 II.200 II.200 FELDE 1.200 FELDE 1.200 II.200 II.200 FELDE 1.200 FELDE 1.200 FELDE 1.200 FELDE 1.200 II.200 FELDE 1.200 FELDE 1.2					1.210							
MXYLEN								1 -	7999.900			
MA 59500.000 70500.000  NIT 568.000 42.100  ES 18.000  FFLDE 0.053  FILDT 0.070 0.070  TIEDCE 1.200 1.200  TOLEE 1.300 1.300  TFOLE 1.100 1.100  XYLEN 72.470 2.470					/12.900				12.000			
NIT 568.000 41.100  OMAT 5.000  FELDE 6.053  FILDT 6.070 1.070  TIEDCE 1.200 1.200  TOLEE 1.300 1.300  TPOLE 1.100 1.100  XYLEN 72.470 2.470												
OXAT				ن				,	•			
### 18.000									•			
FFLDE 0.053  FILDT 0.070												
FILDT 0.070070  AU4 153090.000 198.00.000  T1CDCE 1.200 1.200  TCLEE 1.300 1.300  TPCLE 1.100 1.100  XYLEN 12.470 2.470												
SU4 151000.000 198.00.000 TICDEE 1.200 1.200 TCLEE 1.300 1.300 TPOLE 1.100 1.100 XYLEN 12.470 2.470		PILDT										
TICDCE (1.200 1.200 1.200 TCLEE (1.300 1.300 1.300 TFCLE (1.100 1.100 1.100 XYLEN 1.2.470 7.2.470				٠ ج	9000.000			12,,				
TCLEE									-			
XYLEH (2.470) (2.470)					41.300							
7.4									1.100			
20 77.100 100.000					-				×2.470			
	-	±14			77.100				100.300			

WELL # 37346	AQUIFER ALL	SCREENED INTERVAL 8.6- 24.0	CASING DIAMETER 4.0	BEDROCK DEPTH 24.0	BEDROCK LITHOLOGY SH	WQAQ 1	DENVER SAND
	COMPO		QUARTER FYS	37 4TH	QUARTER FY	87	
	112TC	Ξ	<1.000		<1.000		
	11DCE	-	<1.100		<1.100		
	11DCLE 12DCLE		<1.200 <0.610		<1.200		
	ALDRN	•	<0.070		<0.610 <0.070		
	AS		<3.070		3.200		
	BTZ		<2.000		<2.000		
	CSH6 CA		<1.340 91800.000		<1.340		
	CCL4		<2.400		48700.000 <2.400		
	CD		<5.160		<5.160		
	CH2CL2		<5.000		<5.000		
	CL CHCL3		<1.400 73900.000		/1.400		
	CL6CP		<0.070		40900.000 40.070		
	CLC6H5		<0.580		<0.580		
	CLDAN CPMS				•		
	CPMSO		<1.300 <4.200		<1.300		
	CPMSO2		44.700		<4.200 <4.700		
	CR		<5.960		<5.960		
	CU DBCP		<7.940 <0.130		<7.940		
	DOFD		79.310		<0.130 <9.310		
	DIMP		52.200		.10.500		
	DITH DLDRN		<1.100		<1.100		
	DMDS		<0.060 <1.800		<0.060 <1.800		
	DMMP		<15.200	•	<15.200		
	ENDRN ETC6H5		49.052		0.052		
	FL		1.280 1220.000		71.230 1300.000		
	HG		0.240		0.240		
	ISODR K		10.060		<0.050		
	ME 16H5		3660.000 -1:0		2670.000		
	MG	1	7290.909		10500.000		
	MIBK		712.900		(12.200		
	MXYLEN NA		71.350 1439, 996		1.150		
	1 1 1 m			•			
	OKAT		18.11		** ** ** ** ** ** ** ** ** ** ** ** **		
	DB PDDDE		* * * * * * * * * * * * * * * * * * * *		* \$		
	FFI DT		19.05 s 0.076				
	354	. 7	երդացում մար	;	1.014 3500.000		
	TICOGE	·	1.233		1.200		
	77.555				+		
	TPCLE KYSEM		1.199		3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
	ΞN.		12.300		2.42° 44.5mm		

WELL # 37347	AQUIFER ALL	SCREE INTER	VAL	CASING DIAMETER 4.0	BEDROCE DEPTH 33.5		BEDROCK LITHOLOGY SH	WQAQ 1	DENVER SAND
		INTER 23.2- CUND CE	VAL 33.8 3RD	DIAMETER	DEPTH 33.5	7 5 5 6 0	LITHOLOGY SH  QUARTER FY <1.700 <1.000 <1.100 <1.200 <0.610 <0.070 <3.070 <2.000 <1.340 2000.000 <5.160 <5.000 <1.400 4900.000 <0.580 <1.400 4900.000 <0.580 <1.400 4900.000 <1.400 4900.000 <0.580 <1.300 <4.700 <6.940 <7.940 <7.940 <7.940 <7.940 <7.940 <1.100 <7.940 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1.100 <1	1	
	PFDDT 304 T12DCE TCLEE TRCLE KYLEN		1.	.0.070 299.009 -1.200 -1.300 -1.300 -2.470		Tuòii	0.45; 0.473 000.439 4.200 1.300 4.100 2.47;		
	ZN			52.200			51.200		

WELL #	AQUIFER I	SCREENED INTERVAL 5.4- 42.0	CASING DIAMETER 4.0	BEDROCK DEPTH 41.0	BEDROCK LITHOLOGY SH	WQAQ I	DENVER SAND
	COMPOUN	D 3RD	QUARTER FY8	7 <b>4</b> TH	QUARTER FY	87	
	IIITCE		<1.700		<1.700	J.	
	112TCE		<1.000		<1.000		
	11DCE		<1.100		<1.100		
	11DCLE		<1.200		<1.200		
	12DCLE		< 0.610		<0.610		
	ALDRN		<0.070		<0.070		
	AS BTZ		<3.070		<3.070		
	C6H6		<2.000		<2.000		
	CA	1	<1.340 48000.000		(1.340		
	CCL4	,	(2.400		191000.000		
	CD .		< <b>5.</b> 160		<2.400		
	CH2CL2		<5.000		<5.160 <5.000		
	CHCL3		(1.400		2.200		
	CL	1	99000.000		325000.000		
	CL6CP		<0.070	•	(0.070		
	CLC6H5		2.050		1.260		
	CLDAN		•				
	CFMS		<1.300		<1.300		
	CPMSO		<4.200		<4.200	•	
	CPMSO2 CR		(4.700		(4.700		
	ີ່ ວັນ ວັນ		<5.960 < <b>7.</b> 940		15.300		
	DBCP		<0.130		<7.940. <0.130		
	DCPD		49.310		<9.310		
	DIMP		110.500		10.500		
	DITH		<1.100		<1.100		
	DLDRN		40.060		< 0.060		
	DMDS DMMP		(1.300		G.800		
	ENDRN		<15.200 <0.052		<15.200		
	ETC : H5		71.290		<9.052 <1.280		
	FL		1470		1350.000		
	HG		0.480		<0.430		
	ISODE		and the state of		(0.060		
	K		2439.500		3529.000		
	MECAHS MG				1.219		
	MIEK	'	51		15100.900		
	MKYLEN		1.350		990		
	MA	1.5	1,000	٠,٠	71.350 11.515.51		
	MIT		1011		en a		
	2.75						
			19.50		192-		
	FFCLE				. 7		
	FF55T Sold				er single		
	T:350E		1,200	. :	ATTENDED PROPERTY		
					1 - 2 (11)		
	TPHIE		1.00		1.1000		
	XYLEN						
	2.11		34.600		20.199		

WELL # 37349	AQUIFER	SCREENED INTERVAL 3.2- 43.6	CASING DIAMETER 4.0	BEDROCK DEPTH 44.0	BEDROCK LITHOLOGY SH	WQAQ 1	DENVER SAND
	COMPOU		QUARTER FY8	:7 4T	TH QUARTER FY	19.7	
	111TCE		<1.700		<1.700	. 0 /	
	112TCE 11DCE		<1.000		<1.000		
	11DCLE		<1.100		<1.100		
	12DCLE		<1.200 <0.610		<1.200		
	ALDRN		<0.070		<0.610		
	AS		<3.070		<0.070 <3.070		
	BTZ		<2.000		<2.000		
	С6Н6 СА		<1.340		<1.340		
	CCL4	1.5	31000.000		101000.000		
	CD		<2.400 <5.160		<2.400		
	CH2CL2		<5.000		<5.160 <5.000		
	CHCL3		<1.400		<1.400		
	CL	27	7000.000		115000.000		
	CL6CP CLC6H5		<0.070		<0.070		
	CLDAN		<0.580		<0.580		
	CPMS		<1.300				
	CPMSO		<4.200		<1.300 <4.200		
	CPMSO2		<4.700		(4.700		
	CR		<5.960		12.500		
	CU DBCP		<7.940		<7.940		
	DCPD		<0.130 <9.310		<0.130		
	DIMP		455.000		<9.310 78.400		
	DITH		41.100		/8.400 (1.100		
	DLDRN		<0.060		<0.050		
	DMDS DMMP		(1.800		<1.800		
	ENDRN		<15.200 <0.052		<15.200		
	ETC6H5		<1.280		(0.052		
	FL		250.000		<1.280 1290.000		
	HG		<0.240		19.240		
	ISODR K		70.060		70.060		
	MECSH5	٤	050.000 <1.210		2500.000		
	MG	4.7	100.000		(1.210		
	MIBE	• •	c12.200		25600.000 /12.200		
	MXYLEN		41.350		41.350		
	MA NIT		ည်ကိုသန္တက		21500.000		
	OXAT	•	796.990		5650.000		
	28		/2.000 /8.600		$\cdot 2 \cdot 0 $ (co.		
	PFLDE				13.600		
	FFCCT		4.1.4		0.053 5.075		
	S04	y 1 * •	000.500	1	76000.000		
	T12DÇE TGLSE		1.200		1.200		
	TROLE		200		1.300		
	XYLEN		21.109		1.100		
	ZN	;	15.000		2.476		
		·			73.800		

WELL # 37350	AQUIFER ALL	SCREEN INTERV 26.9- 5	/AL [	CASING DIAMETER 4.0	BEDROCK DEPTH 52.5	BEDROCK LITHOLOGY SH	WQAQ 1	DENVER SAND
	COMP		3RD QL	ARTER FY8	7 47	TH QUARTER F	Y87	
	111T			<1.700		<1.700	-0,	
	112T			<1.000		<1.000		
	11DC			<1.100		<1.100		
	12DC			<1.200 <0.610		<1.200 <0.610		
	ALDRI	V		10.070		(0.070		
	AS			<3.070		<3.070		
	BTZ			<2.000		<2.000		
	C6H6 CA			<1.340		<1.340		
	CCL4		114	000.000 <2.400		113000.000		
	CD			<5.160		<2.400 5.260		
	CH2CL			<5.000		<5.000		
	CHCL3	3		2.120		<1.400		
	CL CL CD		86	100.000		85000.000		
	CL6CP CLC6H			<0.070		<0.070		
	CLDAN			<0.580		0.853		
	CPMS			<1.300		<1.300		
	CPMSO			<4.200		<4.200		
	CPMSO CR	2		<4.700		<4.700		
	CU			<5.960 <7.940		15.300		
	DBCP			<0.130		<7.940 <0.130		
	DOPD			<9.310		<9.310		
	DIMP			16.600		::0.500		
	DITH DLDPN			<1.100		<1.100		
	DMDS			<0.060 <1.800		<0.060		
	DMMF			15.200		<1.800 <15.200		
	ENDRN			<0.052		79.052		
	ETC6H5	5		<1.280		<1.280		
	F <u>L</u> 8:3			20.000		<1220.000		
	ISODR			(0.480 (0.960		70.240 70.060		
	K			50.000		4120.000		
	MECAHS	•		(1.210		·1.210		
	MG MIBK			10.648 2.468		ുത്തുന്നില		
	MKYLEN			1.350	•	+12.900 +1.450		
	MA			rý. látí		23377.000		
	NIT			g.ong		5923.000		
	NKAT FP			2. 14. 2.300		. •	,	
	PPLLE			ម.សព្ ការួកគ.		13.499		
	PPLLT					7 5 1 7 5 3 1 1 1 7 4 7 4 7 4 7 4 7 4 7 4 7 4 7 4 7		
	304		21990			មុទ្ធមាល មេជុំក្		
	TIDDGE	•		1.200		200		
	TOLEE			1.3002		1.000		
	TROLE XYLEN			1.100		4.100		
	ZN			2.479 9.109		-2.470		
	<del>~</del> . ·		' 4	7.107		.20.100		

WELL # 37351	AQUIFER ALL	SCREENED INTERVAL 17.9- 38.5	CASING DIAMETER 4.0	BEDROCK DEPTH 36.0	BEDROCK LITHOLOGY SS	WQAQ 2	DENVER SAND
	COMPO		QUARTER FY	37 4TH	QUARTER FY	87	
	111TC 112TC		<1.700		<1.700		
	11DCE		<1.000 <1.100		<1.000		
	11DCL		<1.200		<1.100 <1.200		
	12DCL	E	<0.610		(0.610		
	ALDRN		<0.070		<0.070		
	AS BTZ		<3.070		<3.070		
	C6H6		<2.000 <1.340		<2.000		
	CA	1	39000.000	1	<1.340 114000.000		
	CCL4		<2.400	!	<2.400		
	CD		<5.160		<5.160		
	CH2CL2 CHCL3	2	<5.000		<5.000		
	CL	;	<1.400 28000.000	•	<1.400		
	CL6CP	•	<0.070	l	23000.000 '0.070		
	CLC6H5	,	<1.730		1.600		
	CLDAN		•				
	CPMS CPMSO		<1.300		1.300		
	CPMSO2		<4.200 <4.700		<4.200		
	CR		⟨5.960		44.700 8.330		
	CU		<7.940		₹7.940		
	DBCP		<0.130		<0.130		
	DCPD DIMP		(9.310		<9.310		
	DITH		12.400 <1.100		10.500		
	DLDRN		(0.060		<1.100 <0.960		
	DMDS		<1.800		<1.800		
	DMMP		<30.400		<15.200		
	ENDRN ETC6H5		70.052 ₹1.280		70.052		
	FL		1690.000		1.280		
	HG		70.480		1729.000		
	ISODR		<0.060		9.260		
	K MEGEH5		1340.000		2500.000		
	MG	:	1.210 909.900		1.219		
	MIRK		21	·	12.00		
	MXYLEN		·1.350		1.750		
	NA NET		5000,000	• •	****		
	OKAT		13 Mg. 2000		$t = e^{-\epsilon t} \cdot e^{-\epsilon t}$		
	PB		· · · · · · · · · · · · · · · · · · ·				
	PPDDE		ា ឯក្នុង				
	PEDLT		•				
	504 713577	- 15 kg	ggg.gga	3 h.	de Charles and the		
	TIODGE TGLEE		<1.20n		1.270		
	TROLE		1.300		1. 500		
	XYLEN		2.17		21.106 2.30		
	ZN		20.100		2.479 20.100 -		
					<b>4</b> 2 • 170		

WELL # 37352	AQUIFER ALL	SCREEN INTERV 29.8- 3	'AL	CASING DIAMETER 4.0	BEDROCK DEPTH 37.9		BEDROCK LITHOLOGY SH	MQAQ 1	DENVER SAND
	COMP 111T	OUND	3RD Q	UARTER FY8	7 4	тн с	UARTER FY	87	
	112T			<1.700			<1.790		
	11DC			<1.000 <1.100			<1.000		
	11DC:			<1.200			<1.100		
	1200	LE		<0.610			<1.200		
	ALDR!	N		<0.070			70.510 -0.070		
	AS			73.070			< 3.970		
	BTZ			(2.000			<2.000		
	C6H6 CA			<1.340			(1.340		
	CCL4		1.	2000.566		٠.	2500.000		
	CD			<2.400			r2.490		
	CH2CL	ָרָ,		<5.160 9.970			< 5.150		
	CHCL3			1.400			·5.000		
	CL		8.2	200.000		7.0	41.400		
	CL6CP		0.2	<0.070		7 8	3490.000 20.070		
	CLC6H			k0.580			19.970		
	CLDAN			•			2 + 2 m t. •		
	CPMS			11.363			:1.300		
	CEMSO CEMSO:	า		<4.200			44.200		
	OFMOU. OR	<u></u>		(4.700			41.700		
	ĈÜ			75.060 7.940			3.330		
	DBOF			10.14			7.940		
	DOPS			10			0.136 1.319		
	SIME			1 .5					
	DITH						1.100		
	ELDPN UMB <i>S</i>						5. 150		
	DMMP			1.50			4 5 to 61		
	EMBRN			15.24r 0.152			15.200		
	ETHH H5						9.452 1.327		
	£5			2		٠,	20.000		
	HG ISCLR			1.23					
	R R			•			2		
	75 77 B S		••			• 4	· · · · · · · · · · · · · · · · · · ·		
	20		<u>a</u> -	• • •					
	MIBR						All Control		
	MKYLEM			Pire :					
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DENVER

SAND

WELL #

37353

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AQUIFER ALL	SCREENED INTERVAL 27.1- 42.4	CASING DIAMETER 4.0	BEDROCK DEPTH 44.0	BEDROCK LITHOLOGY SH	QAQW
COMP		QUARTER FY8	7 4TH	QUARTER FY	
1117(		<1.700		<1.700	0 /
112T( 11DCE		<1.000		<1.000	
11001		<1.100		<1.100	
12DCI		<1.200 <0.610		<1.200	
ALDRN	Ī	<0.070		< 0.610	
AS		<3.070		<0.070 <3.070	
BTZ		<2.000		<2.000	
C6H6		<1.340		<1.340	
CA CCL4	1	19000.000	1	17000.000	
CD		<2.400		<2.400	
CH2CL	2	<5.160 <5.000		<5.160	
CHCL3	_	<1.400		<5.000	
CL	1	19000.000	1	<1.400 03000.000	
CL6CP		<0.070	,	<0.070	
CLC6H:	5	<0.580		<0.580	
CLDAN CPMS				•	
CPMSO		<1.300 <4.200		<1.300	
CPMSO2	2	(4.700		<4.200	
CR		<5.950		<4.700 11.100	
CU		<7.940		(7.940	
DBCP DCPD		<0.130		(0.130	
DIMP		(9.310		<9.310	
DITH		103.000 <1.100		73.700	
DLDRN		0.156		<1.100 <0.060	
DMDS		(1.800		11.800	
DMMP ENDRN		<15.200		<15.20n	
ETC6H5		<0.052		<0.052	
FL		/1.290 /200.000		/1.28n	
HG		0.240	·	1220.000	
ISODR		74. 360		50.240 50.050	
K Mecens		1690.000	,	126 (.500)	
MG		1.210		1 219	
MIBK	٠.	,509, 190 13,300	ž	2400.900	
MXYLEN		1.350		1 ( 400)	
NA	1.15	ara ista		tijski Partorijos s	
NIT	.;	936		12.	
OKAT EB					
PPEDE		*			
PPOUT		9.75. . 7.			
\$54		en de jogene	1.50		
TIBDGE		1.200	· A ·	hree, e.a. 	
TOLRE		• • • •		1.740	
TROLE		1.15%			
KYLEN EN		. · · · · · · · · · · · · · · · · · · ·		. 470	
		97.999		20.100	

WELL # 37354	AQUIFER ALL	SCREE INTER 13.8-	VAL	CASING DIAMETER 4.0	BEDRO DEPT 49.0	TH.	BEDROCK LITHOLOGY SH	WQAQ 1	DENVER SAND
	COMP 111T 112TO 11DCI 11DCI 11DCI 11DCI 11DCI 11DCI 11DCI 11DCI 12DCI ALDRI AS BTU CALO CHOL3 CD CHOL3 CD CHOL3 CD CHOL3 CD CHOL3 CD CHOL3 CD CD CHOCAN CPMSO CPM	OUND CE CE E LE LE LE 2	3RD	4.0  QUARTER FY	49.0	4TH		1	CAND
				22.600		٠.	29.100		

WELL # 37355

AQUIFER ALL	SCREE INTER	RVAL	CASING DIAMETER 4.0	BEDROCK DEPTH 70.0	BEDROCK LITHOLOGY SH	WQAQ 1	DENVER SAND
COMPO 111TC 112TC 11DCE 11DCL 12DCL ALDRN AS BTZ C6H6 CA CCL4 CD CH2CL CHCL3	E E E E		QUARTER FY8- 9.590 <1.000 <1.100 <1.200 <0.610 <0.070 <3.070 <2.000 <1.340 48000.000 <2.400 <5.160 <5.000 3.250	7 41	TH QUARTER FY  29.400  <1.000  2.670  <1.200  <0.610  <0.070  <3.070  <2.000  <1.340  134000.000  <2.400  <5.160  <5.000	87	
CL CL6CP CLC6H: CLDAN	5	1 (	96000.000 <0.070 5.790		2.360 203000.000 <0.070 <0.580		
CLDAN CPMS CPMSO CPMSO CPMSO CR CU DBCP DCPD DIMP DLDEN DMMP EMERA EMERA ETCHS ESC ESC MG MECHS MG MIBR MIBR MIT MA MIT		3 <sup>-</sup>	<1.300 <4.200 <4.700 <5.960 11.100 <0.130 <9.310 <10.500 <1.100 <0.116 <1.300 <1.200 <0.052 <1.280 1540.300 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240 <0.240		<pre>&lt;1.300 &lt;4.200 &lt;4.700 11.100 &lt;7.940 &lt;0.130 &lt;9.310 &lt;10.500 &lt;1.100 -0.087 &lt;1.800 &lt;1.5.200 -0.052 -1.280 -6.052 -1.280 -6.060 3090.000 -1.210 35200.000 -1.210 35200.000 -1.210 35200.000 -1.210 35200.000 -1.210 35200.000 -1.210 35200.000 -1.210 35200.000 -1.210 35200.000 -1.210 -1.210 -1.210 -1.210 -1.210 -1.210 -1.210</pre>		
PB PPDDE PPCT 304 TIGDGE TCLEE TRGLE XYEEN DN		š	24.5.7 1.053 .073 20.00 1.200 1.480 1.460 2.470 35.200	-	14.500 14.053 1.073 1.200 1.200 2.120 2.470 20.100		

WELL #

37356

DENVER

SAND

AQUIFER ALL	SCREENED INTERVAL 8.3- 38.4	CASING DIAMETER 4.0	BEDROCK DEPTH 38.5	BEDROCK LITHOLOGY SH	WQAQ 1
COMPOUNT TO SOLE MY LEN WYLEN TO CLEEN WYLEN COMPOUNT TO CLEEN COMPOUNT COM	JND 3RD	QUARTER FY87	4TH	QUARTER FY.	
ZN		29.900		-2.477 -20.400	

WELL # 37357	AQUIFER ALL	SCREENED INTERVAL 4.5- 19.7	CASING DIAMETER 4.0	BEDROCK DEPTH 19.0	BEDROCK LITHOLOGY SH	WQAQ 1	DENVER SAND
37357	COMPONINT COMPON	4.5- 19.7  UND 3RD  E E E  1		19.0 7 4TH		1	SAND
	IN XYLEN		67.400		20.100		

WELL # 37358	AQUIFER	SCREENED INTERVAL 4.3- 59.9	CASING DIAMETER 4.0	BEDROCK DEPTH 59.0	BEDROCK LITHOLOGY SH	WQAQ 1	DENVER SAND
	COMPOUI 111TCE 112TCE 11DCLE 11DCLE 12DCLE ALDRN AS BTZ C6H6 CA CCL4 CD CH2CL2 CHCL3 CL CL6CP CLC6H5	1	QUARTER FY87		QUARTER FY	87	
	CLDAN CPMSO CPMSO CPMSO CR CBCP DCPD DITH DMDS DMMP ENDC6H5 FIG ISODR MEC6H5 MG MISYLE MY MIAT PPECE TROLE T	; ; 5 7 2		1	<pre></pre>		

WELL # 37359	AQUIFER ALL	SCREE INTER 23.2-	VAL	CASING DIAMETER 4.0	BEDROCK DEPTH 42.9	BEDROCK LITHOLOGY SH	WQAQ 1	DENVER SAND
	ALL  COMP 111T 142T 11DC 11DC 12DC ALDR AS BTZ C6H6 CA CCL4 CD CHCL3 CLC6H CLC6H CLCAN CPMS CPMSO CFMSO	INTER 23.2- OUND CE CE LE LE LE LE S	3RD	DIAMETER	DEPTH 42.9 7 4TH	LITHOLOGY	1	
	CR CU DBCPD DITH DITH DLDRMP DITH DMMP DITH DMMP ETC HG HG HG HS MECH MXA MINA MINA MINA PPDL TCC TCC TCC TCC TCC TCC TCC TCC TCC TC		3 16	<pre></pre>	13	11.100		

WELL # 37360	AQUIFER ALL	SCREENED INTERVAL 26.4-101.	DIAMETER	BEDROCK DEPTH 101.5	BEDROCK LITHOLOGY SH	WQAQ 1	DENUER SAND
	ALL  COMP 111TI 112TC 11DCI 11DCI 12DCI ALDRI AS BTZ C6H6 CA CCL4 CD CHCL3 CL CHCC CHCL3 CL CHCC CHCC	INTERVAL 26.4-101.  OUND 3RI CE CE E LE LE LE 3	DIAMETER  9 4.0  D QUARTER FYS  <1.700  <1.000 <1.100 <1.200 <0.610 <0.070 <3.070 <2.000 <1.340  137000.000 <2.400 <5.160 <5.000 <1.400 62200.000 <1.400 62200.000 <1.400 62200.000 <1.400 <5.960 <7.940 <0.130 <9.310 <1.100 <0.060 <1.800	DEPTH 101.5 37 4TH	LITHOLOGY	1	
	DMMP ENDCHS ENCCHS FL HG ISODR MEC6HS MG MIBK MXA		<pre>&lt;15.200</pre>	1	<pre>&lt;15.200 &lt;0.052 &lt;1.280 &lt;1220.000 &lt;0.240 &lt;0.060 2840.000 &lt;1.210 2500.000 &lt;12.900 &lt;12.900 &lt;12.900 &lt;12.900 &lt;1.350 5:00.300 8940.200  27.400 000.000 1.200 1.200 1.200 2.470 20.100</pre>		

WELL # 37361	AQUIFER ALL	SCREE INTER 21.7-	VAL	CASING DIAMETER 4.0	BEDROCK DEPTH 92.0	BEDROCK LITHOLOGY SH	QAQW 1	DENVER SAND
37361	ALL COMPRISED TO SET TO	OUND CE CE CE CE CE CE CE CE CE CE CE CE CE	3RD		92.0 7 4TH		1	SANU
	XYLEN ZN			2.470 22.800		2.470 -20.100		

DENVER SAND

WELL # 37362	AQUIFER ALL	SCREEN INTERV 34.5- 4	'AL	CASING DIAMETER 4.0	BEDROCK DEPTH 42.5	BEDROCK LITHOLOGY SH	WQAQ 1
	COMP 111T 11DC 11DC 11DC 12DC ALDR AS BTZ C6H6 CA CCL4 CD CH2CL CHCL3 CL CL6CP	CE CE E LE LE V	i	QUARTER FYS	7 4TH	QUARTER FY	-
	CLDAN CPMSO CPMSO CPMSO CR CU DBCP DCPD DIMP DITH DLDRN ETC6H5 FL HG ISODR MEC6H5 MG MIBK MXYLEN MA MIT		1 2 53	<pre>&lt; 0.580</pre>	269 47	<pre>&lt;0.580 &lt;1.300 &lt;4.200 &lt;4.700 18.900 &lt;7.940 &lt;0.130 &lt;9.310 &lt;10.500 &lt;1.100 &lt;0.060 &lt;1.800 &lt;15.200 &lt;0.052 &lt;1.280 1760.000 &lt;0.240 &lt;0.060 3350.000 &lt;1.210 7400.000 &lt;12.300 &lt;12.300 &lt;750.000</pre>	
	OMAT PB PPOSE PPOSE PPOSE TOLES TOLES NYDEM ZM		44 <b>구</b> (	40.147 18.579 6.952 0.074 200.000 4.000 1.340 1.470 55.100		2.005 10.460 10.453 9.070 900.300 1.300 1.300 2.470 74.300	

WELL # 37363	AQUIFER ALL	SCREE INTER 6.9-	VAL	CASING DIAMETER 4.0	BEDROCK DEPTH 32.1	BEDROCK LITHOLOGY SS	WQAQ 2	DENVER SAND
	COMPOU 111TCE 112TCE 11DCE 11DCLE 12DCLE ALDRN AS		3RD	QUARTER FY87 <1.700 <1.000 <1.100 <1.200 <0.610 <0.070	' 4T	H QUARTER FY	87	
٠.	BTZ C6H6 CA CCL4 CD CH2CL2		i	<3.070 <2.000 <1.340 05000.000 <2.400 <5.160 <5.000		<2.000 <1.340 72700.000 <2.400 <5.160		
	CHCL3 CL CL6CP CLC6H5 CLDAN CPMS			1.400 98600.000 <0.070 9.420		<5.000 <1.400 86900.000 <0.070 0.661		
	CPMSO CPMSO2 CR CU DBCP DCPD			<4.200 <4.700 <5.960 <7.940 <0.130 <9.310		<1.300 <4.200 <4.700 <5.960 <7.940 <0.130		
	DIMP DITH DLDRN DMDS DMMP ENDRN			<10.500 <1.100 <0.060 <1.800 <15.200		<9.310 <10.500 <1.100 <0.060 <1.800 <15.200		
	ETC6HS FL HG ISODR K MEC6HS			<pre></pre>		<pre></pre>		
	MG MIBK MXYLEN NA NIT			<1.210 3600.000 <12.900 <1.350 1000.000 370.000		11.210 16200.000 112.900 11.350 25100.000		
	OMAT 88 PPCCE PPCCT 804 T125CE		` <u>a</u> .	72.000 13.800 79.053 79.077 2000.000		2.301 1017 0.053 0.070 7501000 1.250		
	TOLEE TROLE KYLEN EN			1.100 1.100 2.475 (20.100		1.2 m 1.1 m 2.47 20.100		

		SCREENED	CASING	BEDROCK	BEDROCK		D #1
WELL # 37364	AQUIFER ALL	INTERVAL 6.8- 27.3	DIAMETER 4.0	DEPTH 28.9	LITHOLOGY SH	WQAQ 1	DENVER SAND
	COMPOUNT TO THE TOTAL THE TOTAL TO THE TOTAL TO THE TOTAL TO THE TOTAL TO THE TOTAL THE TOTAL TO THE TOTAL THE TOTAL TO THE TOTAL THE TOTAL TO THE TOTAL THE TOTAL TO THE TOTAL THE TOTAL TO THE TOTAL THE TOTAL TO T	JND 3RD	QUARTER FY8	. 4TH	SH  (1.700 (1.000 (1.100) (1.100) (1.200 (0.610 (0.070 (2.000) (1.340) 32000.000 (1.340) 32000.000 (5.160) (5.160) (1.400) 37300.000 (1.300) (4.700) (		

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WELL # 37365	AQUIFER DEN	SCREENED INTERVAL 49.1- 59.7	CASING DIAMETER 4.0	BEDROCK DEPTH 33.5	BEDROCK LITHOLOGY SH	WQAQ 5	DENTER SAND 4
	COMP 111T 112T 11DC 11DC 12DCI ALDRI	CE CE E LE LS	QUARTER FYS	37 4TF	H QUARTER FY <1.700 <1.000 <1.100 <1.200 <0.610 <0.070	87	
	BTZ C6H6 CA CCL4 CD CH2CL CHCL3 CL CL6CP		: : : : : :		<pre></pre>	·	
	CLC6H CLDAN CPMS CPMSO CPMSO CR CU DBCP	5	· · · · · · · · ·		<0.070 <0.580  <1.300 <4.200 <4.700 <5.960 <7.940		
	DCPD DIMP DITH DLDEN DMDS DMMP ENDRN ETC6HS				<pre>&lt;0.130 &lt;9.310 11.500 &lt;1.100 &lt;0.060 &lt;1.800 &lt;15.200 &lt;0.052 &lt;1.280</pre>		
	FL HG ISODR K MEC6H5 MG MIBK MXYLEN				<pre>/1220.000</pre>		
	NA NIT OXAT PB PPCCE PPCCE PPCCT 504 T1200E				77000.360 844.900 1. 00 19.400 2.152 2.201		
	TOLDE TROLE XYLEM ZN				1.200		

DENUER SAND

WELL # 37367	AQUIFER ALL	SCREENED INTERVAL 1.5- 38.4	CASING DIAMETER 4.0	BEDROCK DEPTH 0.0	BEDROCK LITHOLOGY	WQA 1
	COMPOUNTION COMPOUNT		QUARTER FY8 <1.090 <1.630 <1.850 <1.930 <2.070 <0.083 <2.500 <1.140 2.920 58000.000 <1.690		QUARTER FY <1.090 <1.630 <1.850 <1.930 <2.070 <0.083 <2.500 <1.140 <1.920	8;
	CD CH2CL2 CHCL3 CL CL6CP CLC6H5 CLDAN CPMS	2(	<pre>&lt;5.160 &lt;2.480 127.000 )1000.000 &lt;0.083 9.230 &lt;0.152 4.160</pre>	ı	<pre>&lt;1.690</pre>	
	CPMSO CPMSO2 CR CU DBCP DCPD DIMP DITH DLDRM		113.000 4.310 4.310 45.960 47.940 2.570 49.310 397.000 3.340	·	92.400 4.320 -22.500 -7.940 2.100 -2310 485.300 -43.340	
	DML S DMMP ENDRN ETC6H5 FL HG ISOER K		<pre></pre>		**************************************	
	MECSHS MG MIBK MXYLEN NA NIT OXAT PB	0.6.5	(2.100 )900.000 (12.900 (1.040 000.000 820.000 (1.350		2310.000 /2.100 0200.000 /12.000 /1.040 01.00.000 2710.000 1.15.	
	PROCE PROCT 304 T1080E T20BE TROUB MYDEM CM	<sup>9</sup> 7 ફ	2. 14 4. 150 1. 75 2. 5. 5. 4. 10 1. 24 2. 3. 10	÷.		

DENVER SAND

WELL # 37368	AQUIFER ALL	SCREE INTER 18.1-	VAL	CASING DIAMETER 4.0	BEDROG DEPTH 0.0	K BEDROC LITHOLO	K GY WQAQ
	COMP 111TC 111DC 11DC	OUND CE CE CE LE LE 2	3RD 6	QUARTER FY <pre></pre>	37	4TH QUARTER	FY87 90 30 50 80 60 00 00 00 00 00 00 00 00 00 00 00 00
	TYLME TROLE MYLEM CM					1.15 m 1.16 1.16 1.16 1.17	

WELL # 37369	AQUIFER ALL	SCREENED INTERVAL 4.1- 25.2	CASING DIAMETER 4.0		BEDROCK LITHOLOGY	WQAQ 1	DENTER SAND
	COMPO 111TC 112TC 11DCE 11DCL 12DCL ALDRN AS BTC C6H6	Ξ Ξ Ξ	QUARTER FY87 <1.090 <1.630 <1.850 <1.930 3.000 <0.083 <2.500 <1.140 <1.920	' 4ТН	QUARTER FY <1.090 <1.630 <1.850 <1.930 <2.070 <0.083 <2.500 <1.140 <1.920	87	
	CA CCL4 CD CH2CL2	:	<1.690 <2.480		<1.690 <2.480		
	CHCL3 CL CL6CP CLC6H5 CLCAN CPMS CPMSO		71.880 71.880 70.000.000 70.083 70.752 71.080 8.590	2	/1.880 45000.000 /0.083 /1.360 /0.152 /1.080	·	
	7 (JFMS00) 72 70 70 70 70 70 70 70 70 70 70 70 70 70		4.110 		7.230 4.120		
	DIMP DITH DIDPM DMC 3 DMMP		89.400 251.11 3.340 4.333 1.163 476.020		48.900 287.300 43.340 9.245		
	EMORN ET Jehs FL H3		0.40€ 0.42 2690. :		163.000 0.063 0.620 2990.300		
	MIER MG MEIREE R ISIDE		5. 5. 2. 1		0.356 2.333 3.333		
	MKYLEN MA MIT IMAT						
			· · · · · · · · · · · · · · · · · · ·				
	TOUR THALE WYLDM						

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WELL # 37370	AQUIFER ALL	SCREENED INTERVAL 4.4- 25.8	CASING DIAMETER 4.0	BEDROCK DEPTH 0.0	BEDROCK LITHOLOGY	WQAQ 1	DENVER SAND
	COMPOU 111TC: 112TC: 11DCE: 11DCLE 12DCLE ALDRN AS BTZ C6H6 CA	5 5 5	QUARTER FY87 <1.090 <1.630 <1.850 <1.930 <2.070 <0.083 2.720 <1.140 8.430	4TH	QUARTER FY	87	
	CCL4 CD		<1.690 •		<1.690		
	CH2CL2 CH2CL3 CH2CL3 CL6CP CLC6H5 CLCAN CPMSO CPMSO CPMSO CR CDBCP DCPD DITH DLDS DMMP DMMP ETC HG ISCO R	5	<pre>&lt;2.480 &lt;1.880 68000.000 &lt;0.083 27.300 &lt;0.152 &lt;1.080 &lt;1.980 &lt;2.230 &lt;0.130 &lt;0.130 278.300 &lt;0.130 278.300 &lt;0.154 &lt;75.000 &lt;0.620 2550.000 &lt;0.620 2550.000 </pre>		<pre></pre>		
	MEC6H5 MG MTBW		2.100		/2.100		
	MXYLEN MA MIT CXAT FR FRCIE FRCIE		2.2.200 -1.243 - - - - - - - - - - - - - - - - - - -		12.900 1.141 1.141 1.14		
	TOLDE TOLDE TRILE WYLEN	. 5		* • •	•		
			•		•		

WELL #

37371

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AQUIFER DEN	SCREENED INTERVAL 28.3- 39.0	DIAMETER	BEDROCK DEPTH 0.0	BEDROCK LITHOLOGY	WQAQ 5
COMPO 111TO 112TO 11DCI	CE CE CE CE CE CE CE CE CE CE CE CE CE C	QUARTER FY8		QUARTER FY	87
FL HG ISODR		<0.620 2590.000 <0.056		<0.620 2740.000	
MECSHS MG MIBK MXYLEN MA MIT CXAT FB FFILE PFILE		2.100 1900.000 -12.900 -12.900 -1.040 8000.000 -1.350 -1.350	-	70.056 -2.100 1900.000 -12.200 -1.740 8000 838 -1.5	
TIDE TIDE TRILE MYLEM TM				1. 15 1. 16 1. 16 1. 1	

DENVER SAND 4

WELL # 37372	AQUIFER DEN	SCREENED INTERVAL 61.5- 88.5	DIAMETER	BEDROCK DEPTH 0.0	BEDROCK LITHOLOGY	WQAQ 5
	COMP 111T 112T 11DC 11DC 12DC ALDRI AS BTZ C6H6 CA	CE CE E LE LE	QUARTER FY8 <1.090 <1.630 <1.850 <1.930 <2.070 <0.083 <2.500 <1.140 10.300	7 4TH	QUARTER FY <1.090 <1.630 <1.850 <1.930 <2.070 <0.083 <2.500 <1.140 <1.920	87
	CCL4 CD CH2CI CHCL3 CL CL6CF CLC6H CLDAN CPMS CPMSO CPMSO	5	<1.690 <1.880 57800.000 <0.083 42.400 <0.152 <1.080 <1.980 <2.230	·	<1.690 <2.480 <1.880 59600.000 <0.083 4.980 <0.152 <1.080 <1.980 <2.240	
	CR CU DBCP DCPD DIMP DITH DLDPN DMCS DMMP ENDRN ETC6H				<pre></pre>	
	FL HG: ISODR K MEC6HS MG MIBK MKYLEN		2350.000 <0.056 <2.100 <12.900 <1.040	·	<pre></pre>	
	NIT OXAT PB PRODE PROOF ROOF TOLEE TROLE KYLEN				5.455 3.446 3.446 5.450 5.450 2.160 2.160 1.210	

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WELL # 37373	AQUIFER ALL	SCREENED INTERVAL 4.3- 25.7	CASING DIAMETER 0.0	BEDROCK DEPTH 0.0	BEDROCK LITHOLOGY	WQAQ 1
	COMPOUNT TO THE TOTAL THE TO	JND 3RD	QUARTER FY8	37 4TH	QUARTER FY	
					,	

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WELL # 37374	AQUIFER ALL	SCREENED INTERVAL 8.7- 24.9		BEDROCK DEPTH 0.0	BEDROCK LITHOLOGY	WQAQ 1
	COMPOI 111TCI 112TCI 11DCE 11DCLI 12DCLI	E E	QUARTER FY <1.090 <1.630 <1.850 <1.930 <2.070	87 4TH	QUARTER FY <1.090 <1.630 <1.850 <1.930	87
	ALDRN AS BTZ C6H6 CA CCL4		<pre></pre>	5	<pre></pre>	
	CD CH2CL2 CHCL3 CL CL6CP CLC6H5	-	<5.160 <2.480 2.930 386000.000 <0.083 13.300	7	5.460 <2.480 3.020 16000.000 <0.083	
	CLDAN CPMS CPMSO CPMSO2 CR CU		<0.152 <1.080 <1.980 <2.240 <5.960 <7.940		21.900 <0.152 <1.080 <1.980 <2.240 45.700 <7.940	
	DBCP DCPD DIMP DITH DLDRN DMDS		<pre>&lt;0.130 &lt;9.310 445.300 &lt;3.340 &lt;0.054 &lt;1.160</pre>		<pre>/0.130</pre>	
	DMMP ENDRN ETC6H5 FL HG ISODR		<15.200 <0.060 <0.620 4170.000	<i>(</i> ·	<1.160 <163.000 <0.060 <0.620 <0.500	
	MECSHS MECSHS MECSHS MA		<0.056 .2.100 60000.000 <12.900 <1.040		<pre></pre>	
	NIT OXAT PB PFICE PFICT	,	34000.000 938.000 71.350 18.600 0.046 70.050	÷ž	4101.5 : 1 1155; 1.151 24.1 1.059	
	304 T1000E T00EE TROUE KYDEM DM	214	10100.01 1.75 0.16 1.311 1.1;	202	11000 1.780 2.780 1.170 1.170 20.170	
				•	- 1 • ' '	

		SCREENED	CACTUC				
WELL #	AQUIFER	INTERVAL	DIAMETER	BEDROCK DEPTH	BEDROCK		DENVER
37376	DEN	40.3- 51.	0 4.0	0.0	LITHOLOGY	WQAQ 5	SAND
	COMPO	ar dau	D QUARTER FY	0.7			3
	111TC	Έ	0 QUARIER F1 (1.090	8/ 4TH	QUARTER FY	87	
	112TC		<1.630		<1.090 <1.630		
	IIDCE		<1.850		<1.850		
	11DCL 12DCL		<1.930		<1.930		
	ALDRN		<2.070		<2.070		
	AS		<0.083 <2.500		<0.083		
	BTZ		<1.140		<2.500		
	C6H6		3.640		<1.140 <1.920		
	CA CCL4		•		•		
	CD CCT4		<1.690		<1.690		
	CH2CL2	2	. 100		•		·
	CHCL3	•	<2.480 <1.880		<2.480		
	ÇL		14800.000		<1.880		
	CL6CP		<0.083		15200.000		
	CLC6H5 CLDAN		33.000		<1.360		
	CPMS		<0.152		<0.152		
	CPMSO		/1.989 ⟨1.989		41.080		
	CPMSO2		2.240		<1.980 <2.240		
	- CR CU		•		12 - 24U		
	DBOP		. 0 . 1 3 1		•		
	DOFD		(0.133 (9.319		<0.130		
	DIMP				79.310		
	DITH		13.340		-10.100 -3.340		
	DLLPN DMLS		<0.054		(0.054		
•	DMMF		-1.160 -15.200		11.160		
	ENDPN		/0.050 /0.050		<16.300		
	ETCSHS		<0.520		70.060 10.620		
	FL HG		1000.000		1000.000		
	ISODR		70.356		•		
	K		V • 225		10.055		
	MECSHS MG		2.12		2.100		•
	WIBK		,				
	MXYLEM		/12.990 /1.041		1.740		
	MA		• , =		1.740		
	MIT IKAT		•		•		
	2 Am. 28	,	. 5				
	77117		•				
	PELCE PELCE						
	डं.च	•			• 15 h		
	and the second		1.75	-	1.75		
	The second secon						
	YYLEX		• • • •		1 2 1 1 1 1		
	237		•				

WELL # 37377	AQUIFER ALL	SCREE INTER 22.7-	VAL	CASING DIAMETER 4.0	BEDROCI DEPTH 0.0	K BEDROCK LITHOLOGY	WQAQ 1	DENVER SAND
	COMPTITUTE OF THE TOTAL OF THE	CE CE EE LE LE 5	19	QUARTER FY8'		ATH QUARTER FY		
				-		45.600		

DENVER SAND

WELL #

37378

AQUIFER ALL	SCREENED INTERVAL 23.8- 34.7	CASING DIAMETER 4.0	BEDROCK DEPTH 0.0	BEDROCK LITHOLOGY	VQAQ 1
COMPONING TO THE TOTAL TO THE T	OUND 3RD CE	4.0  QUARTER FY8° <1.090 <1.630 <1.1630 <1.1850 <2.0880 <2.0880 <1.140 3.1400 <3.1400 <3.1400 <3.1400 <3.1400 <3.1400 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <41.1800 <4	7 4TH	QUARTER FY:	1
ZH	•			20.100	

DENVER

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				booker, E	.00		
WELL # 37379	AQUIFER DEN	SCREE INTER 39.3-	RVAL	CASING DIAMETER 4.0	BEDROCI DEPTH 0.0	K BEDROCK LITHOLOGY	WQAQ 5
	COMP 111T 11DC 11DC 11DC 11DC 11DC 11DC 11DC	CE CE EE LE N	27 41 729 2	QUARTER FY		4TH QUARTER FY	787

WELL # 37380	AQUIFER DEN	SCREENED INTERVAL 64.3- 75.	DIAMETER		BEDROCK LITHOLOGY	WQAQ 5	DENVER SAND 4
	DEN	04.3- 75.  OUND 3RI CE CE E LE LE N		DEFTH 0.0	LITHOLOGY  H QUARTER FY	5	SAND
	DBCPDCFMPDCFMPDCFMPDCFMPDCFMPDCFMPDCFMPDCF		0.191 /9.310 /10.500 /10.500 /10.060 /15.200 /0.620 /0.620 /0.050 /0.		7.940		

WELL # 37381	AQUIFER I	CREENED NTERVAL .3- 28.5	CASING DIAMETER 4.0	BEDROCK DEPTH 0.0	BEDROCK LITHOLOGY	WQAQ 1	DENVER SAND
	AQUIFER I	NTERVAL .3- 28.5 D 3RD	DIAMETER	DEPTH 0.0 7 4TE		1	
	TROLE MYDEM EM		1.316 1.316 1.34 19.000		7.100 /1.310 1.340 20.100		

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WELL # 37382	AQUIFER DEN	SCREE INTER 33.6-	VAL			BEDROCK DEPTH 0.0		BEDROCK LITHOLOGY		DENVER SAND 3
	COMP		3RD	QUARTER	FY87	4'	TH (	QUARTER FY	(87	
	111T( 112T(			•			•	<1.090	. •	
	1100			•				<1.630		
	IIDCI	ΞE		•				<1.850 <1.930		
	12001			•				(2.070		
	ALDRN AS	1		•				<0.083		
	BTZ			•				12.500		
	C6H6			•				<1.140		
	CA			•				<1.920		
	CCL4			•				<1.690		
	CD CH2CL	<b>n</b>		•						
	CHCL3			•				<2.480		
	CL			•			2.8	16.600 1000.000		
	CL6CP			•			20	<0.083		
	CLC6H CLDAN			•				1.870		
	CPMS			•				<0.152		
	CPMSO							∙1.080 <1.980		
	CPMSO: CR	2		•				2.240		
	ខិមិ			•				•		
	DBCP			•				. 0.130		
	DOFD			•				9.310		
	DIMP DITH			•				10.100		
	DLDRN			•				<1.590		
	EMES			•				0.273 ·1.160		
	DMMP			•				<15.300		
	ENDRN ETC6H5			•				10.060		
	FL			•			~	70.620 340.000		
	HG			•			-	340.909		
	ISODR K			•				10.056		
	 MECSHS			•				/2.100		
	MG			•						
	MXYLEN			•				12.900		
	MA			•				1.040		
	NIT			-				•		
	OXAT			•				1.350		
	PB PPDDE			•						
	PPIET			•				3.046		
	304			•		,	1.27	5.50 5.00		
	T1200E			•			20.	.750		
	TOLEE TROLE									
	XYLEN			•				1.310		
	ZN ZN			•				1. 147		
				•				•		

DENTER SAND

VELL # 37383	AQUIFER ALL	SCREEN INTERV	AL	CASING DIAMETER 4.0	BEDROC DEPTH 0.0		ROCK	WQAQ 1
	COMP	OUND	3RD	QUARTER FY	87	4TH QUAR	TER FY	ឧ 7
	111T	CE		(1.090			1.090	5 /
	112T			<1.630			1.630	
	11DC			<1.350		<	1.850	
	11DC:			<1.930		<	1.930	
	12DC			42.970		₹	2.070	
	ALDRI	<b>1</b>		<0.083			0.083	
	AS			<2.500			2.500	
	BTZ C6H6			<1.140			1.140	
	CA			3.170			1.920	
	COL4			62000.000		15400		
	CD.			<5.160			1.690	
	CH2CI	1.2		<2.480			5.160	
	CHOL			(1.880			2.480 1.980	
	-31		1	31000.000		112000		
	CL6CE		,	0.083			0.083	
	CLOSE			11.400			1.360	
	CLDAN	ī		<0.152			0.152	
	CEMS			71,080			.080	
	GPMSG			<1.980			. 580	
	OPMSO OR	4		<2.240			1.240	
	Ĉij.			₹5.960 ₹7.940			.200	
	ยื่ออ			77.345 70.130			. 940	
	DOPD			9.310			1.130 1.310	
	TIMP			\$1.300			. <b>3</b> 00	
	DITH			73.340			340	
	LUDPM			·0.954		· 9	.054	
	7 646 M			1.19		. 1	* 1 mm	
	UMMP Endpn			15.299			. 300	
•	ETCSH			70,050 19,620			. 160	
	FL			1590.000			.420 .630	
	97							
	ISCEP			. 9 . 4 <b>5</b> 4				
	Y			•		2360	•	
	MERAH	Ç.		2 + 52		· 🙃	•	
	M/3		- i	aan <sub>je</sub> r oo		4599		
	MXATE; WIBK	•		112.399			• 12 C	
	NA NA	•		1.4				
	NIT		••	2001. 20 <b>2</b> 0.		2	•	
	XAT		-			•	•	
	6.8						• • •	
	FFTTE						· · · · · · · · · · · · · · · · · · ·	
	PILLT			\$ .	•	,	1 1	
	3 4		•	•				
	71110E	•		1, 15,		٠.	• /	
	AMARIA ANTONIO			•			****	
	TRILE XVIII					· •		
	7.14 7.14					•		
	,					• • •	•	

ELL #	AQUIFER ALL	SCREENED INTERVAL 29.9-51.5	CASING DIAMETER 4.0		H LIT	DROCK HOLOGY SH	WQAQ 1	DENVER SAND
	COMPOUND	3RD OUAR	TER FY87	4TH QUAR	TER FY87	2ND OUA	RTER E	Y8'8
	111TCE	21.0			•		1.090	-00
	112TCE		•		_		1.630	
	11DCE		•				1.850	
	11DCLE				•		1.930	
	12DCLE				•		2.070	
	ALDRN				•		0.083	
	AS		•		•	<	2.500	
	BTZ				•		•	
	C6H6				•		0.860	
	CA		•		•		•	
	CCL4		•		•	<	1.690	
	CD		•		•		•	
	CH2CL2		• 1		•	1	7.500	
	CHCL3		•			•	2.480	
	CL		•		•	35200		
	CL6CP		•		•		0.083	
	CLC6H5				•		7.360	
	CLDAN				•		0.152	
	CPMS				•			
	CPMSO				•		•	
	CPMSO2				•		•	•
	CR		•		•		•	
	ca		•		•		•	
	DBCP		•	•	•	< 1	0.130	
	DCPD		•	•	•		•	
	DIMP		•	•	•	< 10	0.100	
	DITH		•	•	•			
	DLDRN		•	•	•	< 1	0.054	
	DMDS		•	•				
	DMMP ENDRN		•	•			6.300	
	ENURN ETCSH5		•	•			0.060	
	EL 1985 FL		3	•			0.0090 0.000	
	ru HG		•	•		1341	1.003	
	ISODR		•	•			3.055	
	K.		•	•				
	MEC6H5		•				•	
	MG		•					
	MIBK			`				
	MXYLEN					÷.	. 1233	
	MA						•	
:	NIT	,						
	CXAT							
	F.P						•	
	PPDUE						. 44	
							5.55	
	304	•		•		187		
-		•					. 2 ' '	
	TIBE	•					• •	
							* 333	
	NILDN	•		•		,	1 to 10	
	- 1.							

			•						New York
:LL * '385	AQUIFER ALL	SCREENED INTERVAL 39.5- 50.4	CASING DIAMETER 4.0	BEDROCK DEPTH 0.0	BEDROCK LITHOLOGY	₩Ç ≒Q	DENVER SAND		H,
	COMP	OUND 325	0113.0000						Jy.
	COMP 111T		QUARTER FY	87 4TI	H QUARTER FY	787			
	112T		•		<1.090				
	11DC		•		<1.630				
	1100		•		<1.850			•	
	12DC		•		<1.930				
	ALDRI		•		√2.070 <b>√0.</b> 083				
	AS				4.380				
	BTZ		•		<1.140				
	C6H6		•		3.980				
	CA		•					•	
	CCL4		•		<1.690				
	CD CH2CI		•		•				
	CHCL		•		<2.480				
	CL	>	•		10.500				
	CLECE		•		502000.000				
	CLC6F		•		0.083			•	
	CLDAN		•		6.990				
	CPMS		•		<0.152 <1.080				
	CPMSC		•		<1.980	•			
	CPMSO	2	•		12.240				
	OR.		•					,	0
	<u>gr</u>		•	•	•			,	
	DBCP		•		<0.130				
	DORD DIMP		•		(9.310				
	DITH		•		12.000				
	DIDEN		•		(1.590				
	1M23		•		0.470			<b>,</b>	
	DMMP		•		(1.16)			•	
	ENDRN		•		<16.300 0.067				
	ETC6H	5	•		(0.520				
	FL		•		3570.000				
	83		•						
	<u> </u>		•		70.056			•	
	MECEH: K	-	•						
	MG MG	?	•		/2.joa				
	MIBE		•		•				
	MXYLE	1	•		12.300				
	MA	•	•		11.040			•	
	NIT		•		•			•	
	CXAT		•		1				
	PΒ		•						
	PRIDE				•				
	PELLT				, i i i i				
	37.4		•	:	Contract Contract			_	
	T1257E		•		1.250			•	
	TOUT		•		76				
	XYLEN		•		12.510				
	3M		•		• * • *				
			•		•				

L # 187	AQUIFER DEN	SCREENED INTERVAL 36.8- 42.	DIAMETER	BEDROCK DEPTH 0.0	BEDROCK LITHOLOGY	WQAQ 5	DENTER SAND 2
	COMPO 111TC 112TC 11DCE 11DCL 12DCL ALDRN	E E E	QUARTER FY8 <1.090 <1.630 <1.850 <1.930 <2.070 <0.083	37 4TB	QUARTER FY <1.090 <1.630 <1.850 <1.930 <2.070 <0.083	87	
	AS BTZ C6H6 CA CCL4		<2.500 <1.140 73.800 206000.000 <1.690		<pre></pre>		
	CD CH2CL: CHCL3 CL CL6CP		<5.160 <2.480 8.620 303000.000 <0.083	:	75.160 72.480 71.880 71.880 70.00.000		
	CLC6HS CLDAN CPMS CPMSO CPMSO2		74.700 70.152 71.030 71.980 72.240		1.360 40.152 41.080 41.980 42.240		
	CR CY DBCP DCPO DIMP		8.140 <7.940 0.779 <9.310		8.140 47.940 40.130 49.310 10.100		
	DITH DLDPN DML3 DMMP ENDPN		73.340 70.054 71.150 715.200 70.050		<3.340 <0.054 <1.160 <16.300 <0.060		
	ETC6H5 FL HG ISODR N		1.320 3220.000 70.056		/0.620 4820.000 /0.056		
	MEDAHS MIBK MIBK MA		72.130 35600.000 712.300 1.270 74020.100		2.100 35600.000 712.900		
	MIT EXAT EB PEDDE		17230.000 		7219.00 1.00 1.00 1.00 1.00 1.00 1.00		
	89017 304 T1200E T0188 T8018	2+3	1	<sup>(*)</sup>	. 53 . 55 . 55 . 56 . 310		
	ZN XYLEN				1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1		

			COOKCE, EC	1 1 1 2 6 6			
LL #	AQUIFER DEN	SCREENED INTERVAL 69.8- 86.0	CASING DIAMETER 4.0	BEDROCK DEPTH 0.0	BEDROCK LITHOLOGY	WQAQ 5	DENVER SAND 4
	111T 112T 11DC 11DC 12DC ALDR AS BTZ C6H6 CA CCL4 CD CH2CI CHCCI CLCGE C	CE CE E LE LE LE N	QUARTER FY8	7 4TE	QUARTER FY		j
	CR CU DBCP DCPD DIMP DITH DLDRN DMDS DMMP ENDRN ETC6H: HG	5			<pre></pre>		
	ISODR K MECCHE MG MIBK MXYLEN NA NIT OXAT PB FFCCT SO4 TYCLES TRCLE TRCLE XYLEN EN		<pre></pre>	. † 5	<pre></pre>		

L # 89	AQUIFER A/D	SCREENED INTERVAL 8.4- 35.2	CASING DIAMETER 4.0	BEDROCK DEPTH 0.0	BEDROCK LITHOLOGY	WQAQ 3	DENVER SAND
	COMPOUNTINE 1117CE 11TC 11TC 11TC 11TC 11TC 11TC 11TC 11		QUARTER FY8	1	QUARTER FY	87	
	FL HG ISODR		2190.000 		70.620 2810.000		,
	K MEC6H5 MG MIBK MXYLEN NA NIT OXAT PRODE PRODE FROLE TOLEE KYLEN TM	ي بر	2.100 3800.000 412.200 41.040 9000.101 163.000 41.250 418.400 41.250 418.400 41.750 418.400 41.750 418.400 41.750	21	/2.100 3800.000 /12.900 /12.900 /1.040 9000.000 163.000 /1.050 /1.050 /1.050 /1.050 /1.050 /1.050 /1.050 /1.050 /1.050 /1.050 /1.050 /1.050 /1.050 /1.050 /1.050 /1.050 /1.050		•

,L # 90	AQUIFER DEN	SCREENED INTERVAL 40.1- 46.0	CASING DIAMETER 4.0	BEDROCK DEPTH 0.0	BEDROCK LITHOLOGY	WQAQ 5	DENVER SAND 3	•
	COMPO		QUARTER FY8	7 4TH	QUARTER FY	87		
	11110	CE	<1.090		<1.090	•		
	112TC		<1.630		<1.630			
	1 1 DCI		<1.850 <1.930		<1.850			•
	12DCI		<2.070		<1.930 <2.070			
	ALDRN		<0.083		<0.083			
	AS -		<2.500		<2.500			
	BTZ C6H6		<1.140 8.500		(1.140			
	CA		•		<1.920			•
	CCL4		<1.690		<1.690			
	CD CH2CL	2			•			
	CHCL3		<2.480 <1.880		<2.480			
	CL		55700.000		<1.880 72500.000			
	CL6CP		<0.083		<0.083			•
	CLC6H CLDAN		23.700		3.500			
	CPMS		<0.152 <1.080		<0.152			
	CPMSO		<1.980		<1.080 <1.980			
	CPMSO.	2	<2.240		<2.240			
	CR CU		•		•			•
	DBCP		<0.130					
	DCFD		<9.310		<0.130 <9.310			
	DIMP		•		<10.100			
	DITH DLDEN		/3.340		<3.340			
	DMDS		(0.054 (1.160		(0.054			)
	DMMP		•		/1.160 (16.300			
	ENDRN		<0.060		10.060			
	ETC6H5 FL		70.620 1000.000		<0.620			
	HG	·	1000.000		958.000			
	ISODR K		<0.056		0.056			•
	A MECSHS		<2.100		(2.100			
	MG							
	MXYLEN MIBK		<12.900		<12.900			
	NA NA		<1.040		<1.040			
	NIT		•		•			•
	OXAT PB		<1.350 ·		· 1 . · 50			
	PFDDE		70.046		9.946			
	PPSST		7,75%		1. 59			
	S04 T12DCE	<del></del>	200015 71.750	2.5	1000.000			,
	TOLEE		2.760		1.750			•
	TROLE		-1.310		1.310			
	XYLEN		11.340		1.240			
	ZN .							

L # 91	AQUIFER	SCREENED INTERVAL 9.7- 41.1	CASING DIAMETER 4.0	BEDROCK DEPTH 0.0	BEDROCK LITHOLOGY	WQAQ 1	DENVER SAND
	COMPOUNTED 112TCE 111DCLE 111DCLE 111DCLE 111DCLE 111DCLE 112DCLA AS Z CA CHCL3 CCLCA CCLC	ND 3RD	QUARTER FY87	7 4TH	QUARTER FY		
			•		21.300		

DENVER SAND

L # 92	AQUIFER ALL	SCREENI INTERVA 13.2- 29	AL DI	ASING AMETER 4.0	BEDROCK DEPTH 0.0	BEDROCK LITHOLOGY	WQAQ 1
	COMPONING TO THE TOTAL TO THE T	OUND 3	3RD QUA	RTER FY <1.090 <1.630 <1.630 <1.850 <1.930 <2.070 <0.083 -15.100 <1.690 <2.480 15.000 00.203 8.410 00.000 00.203 8.410 00.152 00.675 4.490 0.130 9.310	87 41	TH QUARTER FY	
				•		20.400	

# 5	AQUIFER ALL	SCREENED INTERVAL 18.5-45.0	CASING DIAMETER 4.0	BEDROCK DEPTH 44.5	BEDROCK LITHOLOGY SH		ENVER SAND	(
	COMPOUND	3RD OHAF	TER EVET	TH QUARTER	EV97 2MD 01	INDTED EV	20	•
	111TCE	JAD QUAI	CIER PIO	itu Önyvtev	FIOT ZND Q	<1.090	00	
	112TCE		•	•		<1.630		
	11DCE		•	•		<1.850		
	IIDCLE		•	•				
	12DCLE		•	•		<1.930		
			•	•		<2.070		•
	ALDRN		•	•		<0.083		
	AS		•	•		<2.500		
	BTZ		•	•		<1.100		
	C6H6		•	•		<1.920		
	CA		•	•		•		
	CCT4		•	•		<1.690		•
	CD		•	•		•		
	CH2CL2		•	•		<2.480		
	CHCL3		•	•		3.850		
	CL			•	1270	000.000		
	CL6CP		•	•		<0.083		
	CLC6H5		•	•		<1.360		
	CLDAN		•	•		<0.152		•
	CPMS		•	•		<1.080		
	CPMSO		•	•		<1.980		
	CPMSO2			•		<2.240		
	CR		•	•				
	CU		•					
	DBCP		_			<0.293		•
	DCPD					<9.310		
	DIMP	·				73.400		
	DITH		•			<3.340		
	DLDRN		•	•		<0.054		
	DMDS		•	•		<1.160		
	DMMP		•	•		16.300		•
	ENDRN		•	•		<0.060		
	ETCEHS		•	•		<0.620		
	FL		•	•		00.000		
	HG		•	•		<0.500		
	ISODR		•	•		<0.056		
	K		•	•		90.000		)
	MEC6H5		•	•				
	MG	,	•	•		<2.100		
	MIBK	•	•	•		12.900		
	MXYLEN	,	•	•				
	NA -	,	•	•		(1.940		
	NIT		•	•		•		
		•	•	•				•
	OXAT	•	•	•	•	(1.350		
	PB	•	•	•		•		
	PPDDE			•		0.046		
	FFCCT	•		•		0.059		
	304	•		٠		90.000		
	TIZDGE			•		1.800		1
•	TOLEE					2.500		
	TROLE			•	5	1.300		
:	RYLEN	•		•		1.349		
	EN	•		•				

, <b>#</b>	AQUIFER ALL	SCREENED INTERVAL 7.5-28.5	CASING DIAMETER 4.0	BEDROCK DEPTH 28.5	BEDROCK LITHOLOGY SH	WQAQ 1	DENVER SAND	
	COMPOUND	3RD QUART	ER FY87 47	TH QUARTER	FY87 2ND QU	ARTER	FY88	
	111TCE	~	•		-	<1.090		4
	112TCE		•	•		<1.630		
	11DCE	•	•			<1.850		
	11DCLE		•			<1.930		
	12DCLE			_		15.200		1
	ALDRN	•	•	•		<1.900		
	AS	•	•	•		<3.680		
	BTZ	•	•	•		<1.100		
	C6H6	•		•		<1.920		
	CA	•	•	•				
	CCL4	•	•	•		<1.690		,
	CD	•		•		(1.050		•
	CH2CL2	•	•	•		<2.480		
	CHCL3	•	•	•		<1.880		
		•		•	22000			
	CL	•		•	33800	00.000		
	CL6CP	•		•		<1.900		
	CLC6H5	•	•	• /		3.370		+
	CLDAN	•		•		<0.348		
	CPMS	•	•	•		<1.080		
	CPMSO	•		•		<1.980		
	CPMSO2	•		•		4.140		
	CR	•		•		•		_
	CU	•		•		•		, <b>•</b>
	DBCP	•		•		<0.130		•
	DCPD			•		77.100		
	DIMP	•		•	5 3	90.000		
	DITH	•		•		6.330		
	DLDRN	•		•		<0.123		
	DMDS			•		<1.160		•
	DMMP			•	<	16.300		
	ENDRN			•		<0.137		
	ETC6H5	•				<0.620		
	FL	•		•	44	20.000		
	HG			•		<0.500		
	ISODR	•		•		<0.128		
	K	•		•		•		
	MEC6H5			•		<2.100		
	MG			•				
	MIBK	•		•	/	12.900		
	MXYLEN			•		<1.040		
	MA			•				
	MIT			•				,
	CKAT					/2.259		
	PB	•						
	PPDDE	-		•		0.105		
	PPDDT	-				×0.135		
	504	•		- -		00.000		
	T12DCE	•		•		/1.800		•
	TOLEE	•		•		9.400		
	TROLE	•		•		7.400 71.800		
	The second secon	•		•		/1.340		
		•		•		1.340		
	ZN			•		•		

# AQUIFER ALL	INTERVAL DI	ASING BEDROCK AMETER DEPTH 4.0 31.9	BEDROCK LITHOLOGY WQAQ SS 1	DENVER SAND	<b>Q</b>
COMPOUND	3RD QUARTER	FY87 4TH OUARTER	FY87 2ND QUARTER	FY88	
111TCE	•		<1.090		1.
112TCE			<1.630		4
11DCE	_	·	<1.850		
11DCLE		•	<1.930		
12DCLE	• • •	•	<2.070	_	
ALDRN	•	•	(0.083	,	
AS	•	•	<2.500		
BTZ	•	•	<1.100		
C6H6	•	•	<1.920		
CA	•	•			
CCL4	•	•			
CD	•	•	<1.690	•	(
CH2CL2	•	•	. 2		
CHCL3	•	•	<2.480		
CL	•	•	<1.880		
CL6CP	•	• .	256000.000		
CLC6H5	•	•	<0.083		
	•	•	28.700	•	
CLDAN CPMS	•	•	<0.152		
CPMSO	•	•	<1.080		
	•	•	<1.980		
CPMSO2	•	•	<2.240	•	
CR	•	•	•		
50 5565	•	•	•	•	<b>3</b> 4
DBCP	•	•	<0.130		
DCPD	•	•	<9.310		
DIMP	•	•	<10.100		
DITH	•	•	+3.340		
DLDRN	•	•	<0.054		
DMDS DMMP	•	•	<1.160	•	4
	•	•	16.300	•	•
ENDRN ETC5H5	•	•	<0.960		
FL	•	•	<0.620		
HG	•	•	3300.000		
ISODR	•	•	<0.500	•	
K	•	•	<0.056	•	4
MEC6H5	•	•	3200.000	·	•
MG	•	•	<2.100		
WIBK	•	•			
MXYLEN	•	•	<12.900		
NA	•	•	71.040		
NIT	•	•	•	1	4
OXAT	•	· •		•	•
PB PAGE	•	•	1.350		
PPDDE	•	•	3.516		
PPODT	•	•	-0.046		
504	•	•	-0.059		
TIODGE	•	-	301900.900		4
	•	•	1.300	•	•
TCLEE	•	•	2.300		
TROLE	•	•	<1.300		
XYLEN	•	•	:1.340		
ZN	•	•	•		

			SOURCE, ES	E 1988			
CLL # OLLER	AQUIFER ALL	SCREENED INTERVAL 0.0- 0.0	CASING DIAMETER 0.0	BEDROCK DEPTH 0.0	BEDROCK LITHOLOGY	WQAQ 1	DENVER SAND
	COMPO 111TC: 112TC: 11DCLI 11DCLI 12D	E	QUARTER FY8 <1.700 <1.000 <1.100 <1.100 <1.200 <0.610 <0.070 <3.070 <2.000 <1.340 <98000.000 <2.400 <5.160 <5.000 <18.400 <77000.000 <0.580 <0.580	1	QUARTER FY	87	
	CPMSO CPMSO2 CR CU DBCP DCFL DIMP DICPN CMC 3		<pre>/4.200 10.100 /5.360 /7.940 -0.187 /4.310 133.000 /1.100 /0.060 /1.860</pre>		16.900 4.700 18.200 17.340 0.184 137.300 11.100 1.100		
	DMMP ENCPN ET 1645 FL HO ISCER K MECCHS MO		15.200 70.052 71.280 1280.410 71.480 70.660 71.213 55500.330				
	MIBH MXYLEN NA NIT CXAT FB FFCLE FFCLE TIGETE L DUE		2.00 2.1.350 2.1.00 2.7.40 2.00	2:			,
	TRIDLE MYCCH MY		1.28 1.17 1.18		1. 1. 1. 1. 1. 1. 18. 1. 10		

	c	SCREENED	21.21.12				
:LL #	AQUIFER I	NTERVAL	CASING DIAMETER		BEDROCK LITHOLOGY	QAQW	DENVER SAND
II	ALL 0	1.0- 0.0	0.0	58.0	SH	1	טמאט
	COMPOUN	D 3RD	QUARTER FY8	7 179	OUSDAED EV	0.7	
	HITCE		<1.700	, 410	QUARTER FY	87	
	112TCE		<1.000		<1.000		
	LIDGE		<1.100		<1.100		
	11DCLE 12DCLE		<1.200	•	<1.200		
	ALDRN		<0.610		-0.510		
	AS		<0.070 <3.070		10.070		
	BTZ		<2.000		(3.070		
	C6H6		(1.340		<pre>/2.000 /1.340</pre>		
	ÇÃ	,	67000.000		159000.000		
	CCT4		<2.400		2.400		
	::D		r5.160		15.160		
	CHOCL2		< <b>5.</b> 000		<5.000		
	CHCL3		<1.400		<1.400		
	CLEOP		91700.000 40.070		93100.000		
	GI 16H5		10.530		(0.070		
	CLUAN		•		40.580		
	CRMS		71.300		1.300		
	GPMS0		<4.200		4.200		
	<u> </u>		74.700		4.700		
	ግ <b>ም</b> .ግንተ		7 <b>5.</b> 960		25.000		
	LACE		+7.949 ≠0.136		44.700		
	t (Trib		79.149 7 <b>9.3</b> 10		79.139		
	1.115		10 636		200 J. 310		
	LITH		. 1 . 1 . 11		1.100		
	DIDPN		< 2.0Kg		0.060		
	t title		1.0		(4.209)		
	DMMP Enuph		15.200		.15.200		
	ET 15H5		/ 0.052 1.24		0.052		
	Fi	,	1 2 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		1,280		
	44-1			•			
	ISCOR		C. Carrier				
	N Ramin no cana		2610,5000		49 40,000		
	MECCHS MG		200 - 213		1.211		
	MIBY	,	780 (. 199 - 712. an i	•	<b>9</b> 000,000		
	MXYLEN				12.000		
	MA	> 1	1 1 to 1	;			
	NIT		NAME OF STREET		3.3.4		
	OXAT		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		•		
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### TASK 39 WATER CHEMISTRY SUMMARY SOURCE, ESE 1988

					00011011, 110	1 700			
LL	#	AQUIFER ALL	SCREEN INTER	VAL	CASING DIAMETER 0.0	BEDROCK DEPTH 0.0	BEDROCK LITHOLOGY	WQAQ 1	DENVER SAND
		COMPOU		3RD	QUARTER FY8	7 4TH	QUARTER FY	87	
		111TCE 112TCE			•		<1.000		
		11DCE	-		•		/1.909		
		HIDCLE			•		<2.000		
		12DCLE	Ξ		•		<1.000		
		ALDRN' AS			•		<4.700		
		BTZ			•		•		
		C6H5			•		<1.100		
		CA			•		•		
		CCL4 CD			•		<1.500		
		CHICLE			•		. 1 000		
		CHCL3			•		<4.800 <1.000		
		ÇL.			•				•
		CL6CP CLC6H5			•		<11.000		
		CLUAN			•		42.100		
		CPMS			•		75.100 714.000		
		CPMSO			•		<17.000		
		GEMSOS			•		8.000		
		CR CV			•		•		
		DECP			•		/3.800		
		DOPD			•		73.509 71.100		
		CIME			•		74.200		
		DITH DEEPN			•		711.000		
		2 40 3			•		4.700		
		UMMP			•		2.500		
		ENEPN			•		77.500		
		ETC6H5			•		/1.90Q		
		FL 8G			•		•		
		iscia			•		5.000		
		K			•		•		
		MECSHS Mod			•		* * * * * * * * * * * * * * * * * * *		
		M) Mibr			•				
		MXYLEN			•		1. 150		
		MA			•		•		
		MIT					•		
		OKAT AR			•		es 📲 🤚		
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		771 TH			•		•		
		* 9 *					•• •		
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### TASK 39 WATER CHEMISTRY SUMMARY SOURCE, ESE 1988

LL I	*	AQUIFER ALL	SCREENE INTERVA 0.0- 0	L DI	ASING AMETER 0.0	BEDROCK DEPTH 0.0	BEDROCK LITHOLOGY	WQAQ 1	DENVER SAND	•
		COMPOU			RTER FY87	4TH	QUARTER FY	87		
		111TCE			1.700		<1.700			
		112TCE 11DCE	2		1.000		<1.000			
		11DCLE	•		1.100		<1.100			•
		12DCLE			0.610		<1.200			
		ALDRN			0.070		70.610			
		AS			3.070		<0.070 <3.070			
		BTZ			2.000		<2.000			
		C6H6		(	1.340		1.340			
		CA			0.000	1	01000.000			Ð
		CCT4			2.400		<2.400			
		CD			5.160		<5.160			
		CH2CL2 CHCL3			5.000		< 5.000			
		72 72			1.400 0.000		71.400			
		ĞL6CP			0.000		95800.000			_
		CLC6H5			0.580		<0.070 <0.580			Ð
		CLDAN					79.589			
		CPMS		•	1.300		·1.300			
		CPMSO			1.200		4.200			
		OPMSO2 OP			1.700		74.700			
		÷5			5.960		16.300			•
		DBCP			3.900 ).130		<7.940			_
		DCPD			7.139 9.310		< 0.130			
		DIMP			1.503		(9.310			
		DITH			1199		10.500 1.100			
		DLDPN			.050		0.060			
		LMLS			.800		1.800			Ð
		DMMP			.200		(15.200			
		EMDRN ETC6H5			.952		0.052			
		FL FL		<1220 <1220	.280		(1.280			
		HG			.489	,	1220.000			
		ISODR			.960		0.249 -0.960			_
		¥		1840			3600.000			•
		ME 26H5			.210		1.215			
		MG Minu		24100			6700.000			
		WXAPEN WIBK			. <u>3</u> 00		/12.300			
		NA		1905:	. 350 . 350		1.350			
		NIT		3740.						•
		OXAT			įĝη:					
		P.9		• 4	,,,,,,,					
		PPICE			., <u>ę</u> .		1, 15 (			
		PFCCT			7. 7		•			
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		TRADE			. * .					
		45.04 45.04			•		1.150			
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				•	** : "		1 374			

### TASK 39 WATER CHEMISTRY SUMMARY SOURCE, ESE 1988

LL #	AQUIFER :	SCREENED INTERVAL 0.0- 0.0	CASING DIAMETER 0.0	BEDROCK DEPTH 0.0	BEDROCK LITHOLOGY	WQAQ 1	DENVER SAND	•
	COMPOUN 111TCE 112TCE	ND 3RD	QUARTER FY <1.700 <1.000	87 4TH	QUARTER FY <1.700 <1.000	87		
	11DCE 11DCLE 12DCLE		<1.100 <1.200 <0.610	·	<1.100 <1.200			•
	ALDRN AS		<0.070 <3.070		<0.610 <0.070 <3.070			
	BTZ C6H6		<2.000 <1.340		<2.000 <1.340			
	CA CCL4 CD		83800.000 <2.400 <5.160		77900.000 (2.40° (5.16)			•
	CH2CL2 CHCL3		<5.000 <1.400		<5.000 <1.400			
	CL CL6CP CLC6H5		60300.000 <0.070 <0.580		67100.000 <0.070 <0.580			•
	CLDAN CPMS		· ·1.300		(1.300	•		
	CPMSO CPMSO2 CR		<4.200 <4.700 <5.960		<4.200 <4.700			
	CU DBCF		<7.940<0.130		11.500 -7.940 -2.130			•
	DCPD DIMP DITH		<9.310 <10.500 <1.100		(9.310  3.200 			
	DLDRN DMDS		<0.060 <1.800		<0.060 <1.300			Ð
	DMMP ENDRN ETC6H5		<15.200 <0.052 <1.280		<15.200 <0.052 <1.280			
	FL HG		1329.000 49.480		1210.000			
	ISODR K MECGHS		70.060 1690.000 71.210		70.060 2370.000 -1.210			Þ
	MG MIBK MXYLEN	2	3000.000 412.900	2	22500.700 (12.200			
	NA NIT	ۏ	/1.350 1300.000 3450.000	;	71,350 71500.100 13610.100			•
	OMAT PB PPDDE		/2.000 /18.500		2.000			
	87107 374	• 1	/0.053 	1 3	9.053 2.050 6900.009			
	TIADCE TILEE TROLE		21.200 21.300	•	1.200			Ð
	MYLEN IN		1.100 2.427 161.000					
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SURFACE WATER

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82033 88 NG GG/L	12000	16003 16003 14900	22356 12350 17753	11800	12400	15100	16600	10200	7580	18000				
82032 B8 CA UG/L	82600	81900 84400	110000 55300 89400	65500 80300	55200 78000	72500 27300	82700	63600	32300	347000				
1092 B8 ZINC DG/L	£.3	48.3 420.1 65.2		37.9	23.0	39.5	88 88 60 60 60 60 60 60 60 60 60 60 60 60 60	114 < 20.1	26.1		•			
1051 B8 LRAD UG/L	<18.5	0.8 0.8 0.8 0.8 0.8	9.85	(18.5 (18.6	<18.5 <18.6	<13.6 <18.6	<13.6 <18.5	418.5 418.5	9.8	5 8 7		~ ~	· ~	~
1042 88 COPPER 0G/L	<7.90	20.80 20.80 20.80 20.80	(7.94	<7.90 <7.94	(7.90	16.75	(7.94	(7.90	(7.94	22.0	(7.90	96.50	1.94	(7.94
1034 B8 CB UG/L	6.00 7.75	(6.00 (11.9	10.1	65.60	<0.00 <11.9	<5.96 <5.96	16.3	<b>6.00</b> <b>6.00</b>	45.96	16.0	=	12.3	16.2	45.96
1027 B8 CADMIUN UG/L	(5.20	65.20	5.16	(5.20	<5.20 <5.16	(5.16 (5.18	<5.16 <5.20	(5.20 (5.20	(5.16		(5.20	(5.20 (5.16	65.16	<5.16
82034 848 0C/L	2850	5400 7230	10200 5010 9330	3550 12500	3670 4150	5080 1870	1750	5560 3730	2160	2820	1300	3715	5080	2550
1002 A8 A8SEMIC UG/L	3.90	33.4	(2.50	(3.90	(4.00	2.38	(3.07 (3.90	9.04	0.07	(3, 90	7	3.00	(2.50	<3.07
99759 11 14 17 18 18	24 24 2 64 64 6 25 25 1 24 44 2	5 05 05 6 04 04 6 05 55 5 05 05	ठा ठड ठड ८० ८० ८० १७ १० ४० ८८ ठड ४४	DTCH DTCH	9708 9708	DTCB DTCB	DICH	DICH	9708 9708	23.00 20.00 20.00 20.00 20.00 20.00 20.00 20.00 20.00 20.00 20.00 20.00 20.00 20.00	2880	STEE	1330	Cres
90 00 00 00 00 00 00 00 00 00 00 00 00 0	0.0.0	9 0 0	000	0.0	0.0	0.0	0.0	0.0	00	0.0	00	a 0	0	0.0
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72005 0 S TRCB	<b>ဖ</b> ဗ ပ		မ မ မ	ပ ပ	ပ ပ	u		 	99	<b>6</b> 69	96	9 09	G	G
71999 0 SAN TTPE	25 25 25 25 25 25	S 255 255	35 35 35 36	E SK	35 35 35 35	as as	35 35 35	3K 3K	35 35 5	35 35 35	35.2	, 3K	*S	75 25
MINISTER OF THE PROPERTY OF TH	01CBD 12/14/85 09:15 01CDD 64/07/85 09:30 01CDD 06/12/86 13:30		03/26/37 06/16/37 10/16/37	04/07/85	03/04/86 12/16/86	03/26/87	10/16/37		06CBB 05/16/87 13:17 06CBB 10/12/87 13:20.	07488 11/21/35 08:30 07488 04/02/86 16:45	07488 06/12/86 15:30	07.488 12/15/86 14.01	07488 03/27/87 09:31	07488 05/15/87 00:00
STORET CODE: BEREGO CODE: PARKETER: URITS: FLD GEP.	03918 72 0958 1 09582	0FS3 1	741052 1 741053 1 741054 1	6PS# 2 0PS#2 2	T44651 2	141053 2	141054 0PSN 6	0PS#2 6 0P3# 6	744053 6 744054 6	07918 44 0PSW 5	02582 5	THEOSI 5	744052 \$	144053 5

### REA SURFACE MATER

98551 78 DIBP 00/1	13 0	410 5	C10.5	< 10.5	<10.5	<10.5	<10 5	<10.5	<10 S	<10.5	<10.5	(10.5	< 10.5	5 012	5 (1)		5 017	<10.5	9 4	0.00	2.01.	<10.5
39330 8883 8883 08.00.03 07.03																						
39430 28 180081% C		090.00	090.00	<b>(0</b> .060	<0.060	<0.060	(0.060	<0.060	<0.060	<0.060	(0 0 0 0 0 v	<0.060	(0.060	(0.060	(0 0 V	<0.050	(0.080	<0.050	(0 050	030 07	(A) 050	(0.060
39399 S8 S8 DC/L	<0.050	<0.052	(0.052	c0.052	<0.052	<0.052	(0.052	<0.052	(0.052	(0.052	<0.052	<0.052	<0.052	<0.052	<0.052	<0.052	<0.052	(0.052	<0.052	050 07	00.00	<0.052
39380 58 58 01510818	090 0>	090'0>	090.0>	090 0>	<0.050	090.0	090.0	090.0	<0.060	090°0>	<0.060	<0.060	<0.060	090.0>	<b>*0</b> 000	090°0>	<0.050	090.0>	090 00	030.67	080	(30.0)
39336 88 88 10014	<0.010	<0.070	<0 010 <0 070	<0.070	<0.070	¢0.070	40.010 010	¢0.070	<0.07	<b>*0.070</b>	<0.070	<0.079	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.03	40.070	<0.070	(0.070
39320 58 88 7, P 508		(0.053	<0.053	<0.053	<0.053	(0.053	<0.053	(0.053	(0.053	<0.053	<0.053	(0.053	<0.053	<0.053	<0.053	<0.053	<0.053	(0.053	<0.053		(0.053	(0.053
39300 S8 P, P' - DDT		<0.053	c0 010	· (0, 070	(0.010	0.070	0.0.0	(0.053	970	<0.030	<0.070	(0.010	<0.070	0.070	<0.053	<0.010	¢0.010	<0.070	<0.070		<0.053	<0.070
34386 S8 BCCPD 0G/L		<0.070 <0.070	¢0.070	<0.070	¢0.010	0.0.0	0.0.0	0.0.0	0/0.0>	40.0%	<0.010	<0.070	<0.070	<0.070	<0.070	<0.010	<0.070	<0.070	<0.070		<0.010	<0.010
81596 888 11750 0671		(12 g	<12.9	(12.9	612.9	5.73	£.71.	(17.9	5.75 2.75	6.7.9	(12.9	(12.9	<12.9	c12.9	(12.9	(12.9	(12.9	<12.9	<b>&lt;12.9</b>		(12.9	<12.9
77985 R8 DCPD 06/L	49.31	5 5 5	69 31	(9.31	<u>بر</u> ج	2 6	2.5	2.5	5.6	. S. S.	(9.3)	( <del>9</del> .31	(9.31	(8.31	(9.31	(9.31	(9.31	(9.31	(9.31	(9.31	(9.31	(9.31
99133 980 950 06/1	(0.133	(0, 130 (0, 130	(0.13)	(0.133	(0.133	001.00	0.1.0	(U. 130	00.100	061.00	će. 130	<b>c</b> 0.130	<b>c</b> 0.130		<b>c</b> 0.130	(0.135	(0.130	<0.130	<0.130	<0.130	<0.130	(0.130
71900 L8 BECORT 0G/L		<0.240 <0.240	<0.24n	60.530	60.359	010 07	017.01	017.03	267.07	27.0	90000	(0.359	0.240	<0.240	<b>60.210</b>	<0.240	<0.240	<0.240	<0.240		<0.240	(0.240
82035 B8 NA UC/L		82200 121000	81000	140000	000551	00110	00001	00700	00+00	2010	00116	0.000	20500	001/1	81000	\$ \$ \$ \$	33800	23900	112000		813000	52800
	01CDD 12/14/85 09:15		01000 09/04/86 09:20	12/16/36		10/16/87	04/01/01	04/01/00 05/12/8E	36/11/00	99/29/29	09/01/71	19/97/50	19/11/97	10/10/01	04/01/86	06/16/86	08/04/98	05/16/87	10/12/87	11/21/35	04/02/86	07488 06/12/86 15:30
STORET CODE: METROD CODE: PARABITER: SMITS:	0 10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	OPSW2 1	0PS3 1	14041	1 750371	144054	0958	0PS#2 2	0053	6 130714	7 150411	7 750511	7 20011	7 \$50141	Orce of	UPS#2 B	0 100	20071	111051 6	44 ×1910	OPSH S	0PS#2 5

38555	× 25	13	17.7		148069	55400	62009	72500	105000	103603	23000	91500	55200	39706	50300	93360	61600	22693	56260	56300	15355	50600	0000	3356	336000	322033	2193
38554	æ 3€	O&F-YYL	06/1	;	17.11	(2.4)	(2, 1)	(7.47	42.47	(2.43	(2, 1)	(2.47	(2.47	(2.47	(3.47	(2.47	(2,4)	(2.4)	(2.47	(2.47	(2.47	<2, 43	(2.47	(2.47	(2,47	(2.47	(7.47
98553	100	TAX-R	1/99	•	(1.35	(1,35	41.35	(1,35	(1.35	(1.35	(1, 35	.(1.35	(1.35	(1.35	(1.35	33	(1.35	(1,35	(1.35	<1.35	(1.35	<1.35	<1.35	<1.35	(1.35	(1.35	35
34371	90 3E	BYLBENZ	7/90			<1.28	(1.28	<1.28	(1.28	(1.28	(1.28	<1.28	(1.28	(1.28	<1.28	(1.28	(1.28	(1.28	<1.28	<1.28	(1.28	<1.28	<1.28	<1.28		(1.28	(1, 28
34030	œ >=	18 3K3ZK38	7/50		(1,34	£	(1.3 <del>1</del>	£.13	(1.3	14.6	1.34	41.34	0.3	1.3	41.34	(1.34	(1,34	41.34	(1.34	41.34	0.3	4.3	41.34	(1.34	(1.34	1.34	*1 34
34010	<b>∞</b>	TOLORN	1/50	î	(1.21	<1.21	(1.21	(1.21	(1.21	(1.21	(1.21	(1.21	41.21	(1.21	(1.21	(1.21	<1.21	(1,21	(1.21	(1.21	(1.21	(1.21	(1.21	(1.21	(1.21	(1.21	(1, 2)
98564	88	1,4-0XAT	3/50	-	(2.00	(20.0	(2.00	(2.00	<2.00	<2.00	<2.00	<2.00	(20.0 (20.0	<2.00	<2.00	<b>42.00</b>	(2.00	<2.00	<2.00	(20.0	<2.00	<2.00	<2.00	<2.50	70	< 20.0	42 00
93563	80	1,4-0178	1/50		41.10	(11.3	(1.10	(1.10	(1.10	<1.10	41.10	41.10	(11.3	<1.10	<1.10	<1.10	(1.10	(1.10	<1.10	(11.3	<1.10	<1.10	cl. 10	(1.10	-V	(11.3	41.10
98562	93	CPMS	1/50		<1.30	(11.7	(1.30	<1.30	<1.30	<1.30	<1.30	<1.30	411.1	<1.30	<1.30	<1.30	<1.30	(1.30	(1.30	(11.1	<1.30	<1.30	<1.30	<1.30	*	(11.7	(1.30
98561	93	CPNSO	1/90		(4.20	(4.20	(4.20	<4.20	<4.20	<4.20	<4.20	<4.20	(4.20	(4.20	<4.20	c4.20	<4.20	<4.20	<4.20	(4.20	<4.20	<4.20	<4.20	<4.20	W.	<4.20	<4.20
98560	88	CPBS02	7/50		:4.70	4.70	4.70	01 10	<4.70	c4.70	c4.70	<4.70	04.70	4.70	<4.70	4.70	(4.70	(4.70	<b>4.70</b>	<4.70	c4.70	<4.70	c4.70	<4.70	¥.	4.70	(4,70
91580	60	DADS	1/50				<1.80	<1.80	<1.80	<1.80	(1.80	<1.80		<1.80	<1.80	<1.80	(1.80	(1.80	<1.80		<1.86	(1.80	(1.80	<1.80			<1.80
81512	38	817	1/56						<2.00	< 2.00	<2.00	< 2.00				<2.00	< 2.00	(2.00	<2.00				< 2.00	< 2.00			
98552	<u>س</u>	DANF	1/50		<15.2	(15.2	. <15.2	<15.2	<15.2	<15.2	<15.2	<15.2	<15.2	<15.2	<15.2	<15.2	(15.2	(15.2	<15.2	(15.2	<15.2	<15.2	<15.2	<15.2	<15.2	(15.2	<15.2
				SABELE ID DATE TIME	£1CDD 12/14/85 09:15	01000 04/01/86 09:30	06/17/36	98/10/60	01CDD 12/16/86 12.50	03/26/37	06/16/87	10/18/87	94/10/10		99/10/60	015CC 12/16/86 12:20	03/26/87	06/16/87		04/01/86	06/16/86	06088 09/04/86 11:50			11/21/85		07.885 06/12/86 15:30
STORET CODE.	BETHOD CODE	071 6 070 977 973 973 973 973 973 973 973 973 973	281180	FLD. GRP	21 R1930	OPSR 1	GPSW2 1	0PS3 1	144051 1	144052 1	14683 1	14034 1	OFSE 2	0PSN2 2	0PS3 2	144051 2	144052 2	144083 2	141054 2	OPSW 6	OPSH2 &	0PS3 6	144053 6	9 150111	05218 44	OPSW 5	OPSW2 5

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39180 78 78 78 78 78 78 78	65,55	41.13	41.10	5. 5.	: A :	6. C	41.16	41.16	21.13	21 13	31 T	41.16	- P	4.16	2:	21.10	41.16
34546 78 11202E 86/L	0.20 0.25	07.20	<1.20 1.92	07.20	(1.20	41.20 cl. 20	(1.20	41.23	67.15	<1.26	(1.20	<1.20	<1.26	<b>1</b> .28	0.23	07.13	<1.20
34531 78 12bcl8 0G/L	0.610	<0.610 <0.610	<0.610 <0.610	<0.610 <0.610	(0.610	<0.610	c0.610	(6,610 (8,618	<0.610 <0.610	<0.610	<0.610	(0.610	<0.610	¢0.610	6	010.00	¢0.610
34511 78 1127CE 0G/L	0.00	<1.00 <1.00	41.00	61.00 1.00	<1.00 . 1.00	41.00 41.00	<1.00	61.88 61.88	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00 .1.		00.17	1.00
34506 78 1117CE 0G/L	41 70	41.76	4.70 4.70	5.2	41.70	41.70	<1.70	41.70	01.10	<1.70	41.70	1.70	41.70	¢1.70	0.	01.17	<1.70
34501 Y8 115CE 8G/L	41.10	41.10	4.10	CT. 12	<1.10	01.15	<1.10	61.15 61.15	41.10	<b>1.10</b>	41.10	(1.18	2.19	¢1.10		01.1	(1.10
34496 Y8 11DCLE 0G/L	(1.20	<1.20 <1.20	(1.20	<1.20	<1.20	<1.20	(1.20	<1.20	<1.20	<1.20	<1.20	(1.20	(1.20	(1.20	00.17	07.17	07.10
34475 Y8 TCLEE 06/L	(1.30	<1.30 <1.30	2.71	3 80	<1.30	1.30	41.30	<1.30	<1.30	c1.30	<1.38	£ 1	S :	CI.30	1.30	000	(1. 50 (1. 50
34423 Y8 98 06/L	(5.00	(5.00 (5.00	6.8 8.8 8.8	65.00	<5.00 3.5	65.00	(5.00	65.00	<5.00	65.00	62.00	65.00	3.5	().00	45.00	2 0	00.63
34301 78 CLC695 1	(0.580	(0.580 (0.580	085.03	(0.580 (0.580	(0.580	(0.580	084.00	<0.580 <0.580	<0.580	<0.580	0.580	380	00.00	0.000	086.03		40.388
32106 73 CHCL3 0G/L	01.40	9.0		1.20	4.15 4.15	07.10	9 5	<b>2 2</b>	<1.40	<b>9</b> :	2:	<b>3</b> :	<del>2</del> :	A	<b>2</b>		af : 1 )
32102 78 CCL4 06/L	(2.40	\$2.40 \$2.40	2 <b>2</b> 5	42.40	(2.40	(2.40	< 2.40	₽.5 7.40 7.40	(2.40	2°	04·2>	01.7	04.77	25.43	04.53	6,	01.10
98581 X8 S04 06/L	174000	248000	316000	226000	101000	88100	181000	39300	156000	126060	00000	1700	1016101	000101	2080000	119000	1100711
98558 X8 FL FL	1330	(1200	×1200	<1220	<1200	<1200	<1200 <1200	<1220	(1220	0021>	00713	0071	0771	0771	2700	11200	2011
Si	0 12/14/85	01CDD 05/12/86 13:30 01CDD 09/04/86 09:20		10/16/87	04/01/86	98/10/60	12/16/86	06/16/97	10/16/87	98/10/10	00/01/00	06/10/60	10/11/01	11/21/85		06/12/86	00/11/00
	095% 1	0PS3 1	141052	144054	0FSW2 2	0PS3 2	144051 2	141653 2	144054 2	0 80 00 00	9 1540	144653 6	144054 6	77 81040	OPSW 5	OPSW2 S	•

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35350	SKF7X018	1/30																																			
39430	ISOPRIN C	1/90	090 07	00.00	00.0	000.0	030.07	100.00	000.00	(0.000 (0.000)	0.083	090'0	090 0>	090'0>	090 02	09000	00.00	0.00	390 63	- (7) - (2) - (3)	090 03	090'0>	0.000	(0.060	090.00	<0.060	<0.050	<0.080	<0.060	(0.060	090.00	<0.060	<0.060	<0.060	090'0>	090.0>	090.00
08086	RADRIK	1/90	60 052	250 05	650.07	10.07	0.00	00.00 00.00 00.00	60.03	(0.052 (0.052	<0.052	<0.052	<0.052	<0.052	<0.050	050 05	(0.050	649.02	130 O	<0.652	<0.052	<0.052	<0.052	(0.052	<0.050	<0.052	<0.052	<0.052	(0.052	(0.052	<0.052	<0.052	<0.050	<0.050	<0.052	<0.052	<0.052
39380	DIRLDRIN	7/90	0.000	090 0>	090 02	000.00	60.00	000.00	000.00	090 0	<0.050	<0.060 <0.05	(0.060	<0.050	<0.060	0.060	<0.060 <0.060	40 050	(0.660	099 02	<0.050	090.03	(0.060	<0.060	<0.060	<0.050	(0.060	<0.060	<0.060	(0.080	<0.060	090.00	0.080	090'0>	<0.060	<0.060	<0°0.050
35330			010 03	<0.070	<0.070	0.010	40.070 40.070	00.00	00.03	(0.070	<0.070	<0.070	0.00°	<0.070	0.200	0/0 0>	<0.070	(0.070	40.070	<0.070	0.010	<0.070	(0.070	<0.070	0.100	<0.070	<0.070	0.070	40.070	c0.010	<0.070	<0.070	0.070	0.200	<0.070	<0.070	<0.010
39320	P, P' - DJE	1/90	40 053	<0.053	(0.053	0.053						<0.053							<0.053							<0.053	<0.053								<0.053	<0.053	<0.053
39300 Sa	P, P' - DDT	1/50	(0.010	<0.070	c0 076	40 070	•	<0.053	<0.070	(0.070	<0.070	€0.070	<0.070	<0.070	<0.050			<0.053	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070		<0.070	<0.070	(0 070	(0.010	(0.070	<0.070	< 0.053			<0.053	<0.070	60.010
34386 S8	HCCPD	1/90	10.070	<0.070	<0.070	40 070		68 070	¢0.070	(0.070	<0.070	c0.010	<0.070	<0.070	×			<0.070	(0.070	:0.070	<0.070	<0.070	<0.070	<0.070		<0.070	<0.070	<b>c0</b> .010	(0.010	¢0.070	<0.010	<0.070			<0.070	(0.010	¢0.010
81596 88	20 m	1/90	6 712	(12.9.	<12.9	<12.9		5 (1)	<12.9	<12.9	<12.9	(12.9	(12.9	(12.9	<13.0			<12.9	(12.9	<12.9	<12.9	<12.9	(12.9	<12.9		<12.9	(12.9	(12.9	(12.9	(12.9	<12.9	<12.9			<12.9	<12.9	<12.9
77985 88	UCPD	1/90	(9.31	(9.31	(9.31	(9,31	(9.31	(9.31	(9.3)	(9.31	(9.31	(9.31	(9.31	(9.31	(9.31	69.31	(9.31	(8.31	(9.31	(9.31	(9.31	(9.31	(8.31	(9.31	(9.31	(9.31	(9.31	(9.31	69.31			69.31	69.31	69.31	(9.31	(9.31	(9.31
99133	UBCP	7 / PO	<0.130	<0.130	c0.130	<0.130	(0.130	<0.130	(0.130	<0.130	<0.130	<0.130	<0.130	<0.130	(0.130	<0.130	<0.130	<0.130	(0.130	<0.130	<0.130	<0.130	<0.130		(0.130	¢0.130	(0.130	co. 130	<0.130	(0.130	(0.130	(0.130	(0.130	<0.130	<0.130	<0.130	< 0.130
71900 L8	MERCORY	a / 90	<0.240	<0.500	<0.359	1.17		<0.240	<0.240	<0.240	<0.500	<0.359	<0.240	<0.240				< 0.240	<0.240	<0.240	<0.500	<0.359	(0.240	(0.240		(0.240	(0.240	000.00	(0.359	<0.240 5.55	(D. 480	(0.240			<0.240	(0.359	(0.240
82035 B8	<b>17</b> 30	7/50	47900	99100	244000	11000		93300	52600	36600	615000	86200	22600	96500				92500	61200	60100	60500	59800	66700	62400		00889	113000	000011	120000	00607	134000	00711			174000	12200	129000
		SAMPLE ID DATE TIME	07488 09/04/86 13:11	12/16/86	03/27/87	08/18/87	11/21/85	04/07/86		09/01/98	12/16/86	07BAA 03/27/87 10:00	06/16/87	10/12/87	12/20/85	11/22/85	12/20/85	04/07/36	08ADD 06/12/86 09:00	09/04/86	12/16/86	03/26/87	06/16/87	08800 10/16/87 12:37	11/13/85		00/00/60	00/11/71	1248 03/21/8/ 10:31	00/11/81	19/57/60	04/01/00	\$8/22/11	08/07/71		03/26/87	13060 06/11/87 12:52
STORRT CODE: MATHOD CODE:		<del></del> -	0PS3 5	14051 5	144052 5	111053 \$	3FQ19 43	₹ 8540	GPSW2 4	6FS3	14051	141052 4	14083	14054		OC MINA		OPSN 11	OPSN2 11	GPS3 11	14051 11	144052 11	14(05) 11	11 15051	75 #1740	0.000	5 5010 5 5010 5 5010 5 5010	0 10055	C 750771	7 70774	0 900441	o would	57 MS780	C MIDEO	01 8840	14052 10	144055 10

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<i>2</i>	3 8	95	231	= ;	3	25	5 5	25.0	57	£3	2	52	53	G	83	=	<b>S</b>	\$	**	50	≆	80	=	<u>چې</u>	112	2	×	3	S	æ	à	Ξ	÷	2
マスタの コルゴーは型 の の の の の の の の の の の の の の の の の の の	(2,47	42.43	42.43	(2.47	(2.47	÷ ;	5	12.47	12.47	12.13	(2.43	42.47	N.	<2.47	12.47	(2.47	(2.47	(2.47	(2.47	(2.47	(2.47	(2.47	42.43	C . C	(2.4)	(2.47	(2.47	(2,4)	12.47	Z	(2.4)	(2.17	(2,47	(2.47
17 1 - 8 18 2 - 8 18 2 - 8	(1.35	(1.35	<1.35	<1.35	4.35	5 5 5 5 7	<1,35	(1.35	<1.35	(1.35	(1,35	(1,35	¥	(1.35	(1.35	(1.35	<1.35	(1.35	(1.35	<1.35	(1.35	<1.35	<1.35	(1,35	<1.35	(1,35	41.35	<1.35	<1.35	N.	1.35	<1.35	(1.35	(1,35
34371 88 8828381 907	(1.28	(1.28	(1.28	(1.23		27.73	. 28	<1.28	<1.28	<1.28	(1.28	(1,60			<1.28	(1.28	(1.28	(1.28	(1.28	<1.28	(1.28		<1.28	<1.28	(1.28	<1.28	<1.28	<1.28	<1.28			<1.28	<1.28	c1.28
18 3832838 68 000*0	41.34	(1.34	41.34	<u>.</u>	F :	7 Z		41.34	£.15	41.34	(1.34	(1,34	78	41.34	(1.34	01.34	c1.34	(1.34	(1.34	41.34	1.34	· 1.34	41.34	4.34	41.34	1.34	4.3	£.5	4.34	**************************************	1.34	11.34	41.34	(1,34
34010 88 101011	(1.21	(1.21	:1.21	2.2	(1.2)	7.5	17.5	(1.21	(1.21	(1.21	41.21	(1.21	75	(1.21	<1.21	(1.21	(1.21	(1.21	(1.21	(1.21	<1.21	(1.21	(1.21	(1.21	(1.21	(1.21	(1.21	(1.21	<1.21	Z.	<1.21	(1.21	(1.21	(1.21
98564 98 4-011	<2.00	<2.00	(2.00	42.00	<b>**</b>	0.025	(2.00	<2.00	<2.00	(2.00	(2.00	< 2.00	¥	<2.00	(20.0	<2.00	(2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	(2.00	<2.00	<2.00	(2.00	(2.00	< 20.0	70	<2.00	<20.0	(2.00	<2.00
98563 08 1,4-0178 1	(1.10	(1.10	41.10	0. : 0. :	<b>*</b>		(1.10	<1.10	(1.10	4.10	cl.10	41.10	×	41.10	(11.3	11.10	(I.10	(1.10	4.10	41.10	¢1.10	41.10	4.10	2. 2.	01.10	¢1.10	<1.10	(1.10	(II.)	- F	41.10	(11.3	(1.10	<1.10
99562 08 CPBS 1	(1.30	(1.30	<b>1.30</b>	6 	- C	C11.3	(1.30	(1.30	(1.30	<1.30	(1.30	<1.30	NA	(1,30	(11.7	.30	(1.30	<1.30	41.30	<1.30	<1.30	<1.30	C1.30	<1.30	<1.30	<1.30	<1.30	¢1.30	(11.1	T.	(1,30	(11.7	<1.30	<1.30
93561 05 CPMSO	<4.20	<4.20	c4.20	2. <del>.</del> .	***	c4.20	c4.20	C4.20	<4.20	c4.20	<4.20	c4.20	Y.	(4.28	c4.20	<4.20	<4.20	<4.20	c4.20	<4.20	(4.26	c4.20	c4.20	<1.20 <1.20	c4.20	(4.20	<4.20	<4.20 €4.20	<4.20		<4.20	c4.20	(4.20	<4.20
98560 08 CPMS02 8674.	44.70	<b>c4</b> .70	<b>64</b> .70	2 ;	-0 C		c4.70	<b>11.</b> 70	c4.70	c4.70	c4,70	4.70	¥.	<4.70	<4.70	<b>c1</b> .70	c4.70	<4.70	c4.70	c4.70	<4 70	c4.70	<b>c4</b> .70	€¶. 10	<b>€</b> .70	c4.70	c4.70	c4.79	CF.33	ž	c4.70	<b>4.70</b>	c4.70	(4,70
81580 08 DMDS UG/1.	(1.80	<1.80	8.	20.1.		<1.80	<1.80	<1.80	<1.80	<1.30	<1.80					<1.30	<1.80	(1.80	<1.80	<1.80	<1.80		. 80	\$ . T	<1.80	<1.80	ć1.80	(T)					<1.80	<1.80
81512 80 812 813 813	Ì	(2.00	ć2.00	00.7>				<2.30	<2.00	<2.00	< 2.00							<2.00	<2.00	<2.00	<2.00				(5.00	< 2.00	<2.00	(2.00					<2.00	<2 00
98552 T8 DBBF 067L	(15.2	(15.2	(15.2	7.61	7.613	(15.2	(15.2	(15.2	<15.2	<15.2	(15.2	<15.2	(15.2	(15.2	(15.2	(15.2	(15.2	(15.2	<15.2	(15.2	<15.2	(15.2	(15.2	(1).2	(15.2	(15.2	(15.2	(15.2	<15.2	<15.2	<15.2	<15.2	(15.2	<15.2
11.72	\$ SABPLE ID DATE TIME 5 07A88 09/04/86 13:11		5 07888 03/27/87 09:31			4 07848 05/12/86 15:10	4 0784A 09/04/86 13:41	4 07848 12/16/86 14:11	4 0784A 03/27/87 10.00		10/12/37	12/20/85	11/22/85		04/02/86	1 08ADD 06/12/86 03:00	98/10/60	12/16/86	03/26/81	1 08ADD 06/16/87 09:33	1 08400 10/16/87 12:37	11/19/85	3 12448 06/16/86 12:45	03/02/08	12/11/86	3 12448 03/27/87 10:31	06/11/87		3 12ABB 04/07/86 12:45	9 13DCC 11/22/85 0°.45		0 13DCC 04/02/86 12:30	-	0 13DCC 06/17/87 12:52
STORET CODE METHOD CODE PARAMETER: UNITS:	FLD GRP.	14051	144052	141030	# 27 dC	OFSW2	6PS3	144051	144052	741053	144054	35-}1	\$ #1030	6701X 6	OPS# 1	0PSN2 1	OPS3 1	144051	144052 1	144083	141054	* KING	0P5 <b>X2</b>	rs-do	14081	141052	141053	144054	OPSW	0.60134	0FQ18 7	0PSM 1	144082 1	744083 1

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1   1914   194756   15   19   1935	4   0784A 06/12/86 15 10   (1200   3360)     4   0784A 09/04/86 13-41   (1200   3360)     4   0784A 09/04/86 14-11   1730   173000     4   0784A 09/04/86 14-11   1730   173000     4   0784A 09/04/86 14-11   1730   173000     4   0784A 10/12/87 12-38   (1220   133000     4   0784A 10/12/87 12-38   (1220   178000     9   03001   12/25/85 09-05   (1200   123000     10   0345D 12/26/85 15-15   (1200   123000     11   0345D 06/12/86 10-45   (1200   123000     11   0345D 06/12/86 10-50   (1200   123000     11   0345D 19/16/86 10-50   (1200   123000     11   0345D 19/16/87 11-00   (1200   13000     11   0345D 19/16/87 11-00   (1200   13000     12   12   12   12   (1200   13000     13   12   12   12   (1200   13000     13   12   12   12   (1200   13000     13   12   12   12   (1200   12000     13   12   12   12   (1200   12000     14   13   13   (12   12   12   (1200   12000     15   13   13   (12   12   12   (1200   12000     15   13   13   (12   12   12   (1200   12000     15   13   13   (12   12   12   (1200   12000     15   13   13   (12   12   12   (1200   12000     15   13   13   (12   12   12   (1200   12000     15   13   13   (12   12   12   (1200   12000     15   13   13   (12   12   12   (1200   12000     15   13   13   (12   12   12   (1200   1200     15   15   15   (1200   12000     15   15		004 0				46				· .
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1   07844   127/15/81   1410   1710   171000   2.40   4.40   4.50   4.50   4.20   4.10   4.10   4.10   4.50   4.50   4.10   4.	4   078A4   12/16/86   14.11   1730   1730000   1730000   14   078A4   05/16/87   10:00   133000   14   078A4   06/16/87   14:21   1720   133000   14   078A4   10/12/87   12:38   1220   133000   19   03801   12/2/85   09:05   1200   131000   150   03801   12/2/85   09:05   1200   131000		085		•		2 5		13 (1 13 (1 13 (1 13 (1)		::: ;;;
1   07844 07/77/87 10:00   0.1200   0.210   0.140   0.580   0.500   0.130   0.120   0.110   0.170   0.180   0.140   0.150   0.140   0.150   0.150   0.130   0.120   0.130   0.120   0.130   0.120   0.130   0.120   0.130   0.120   0.130   0.120   0.130   0.120   0.130   0.120   0.130	4   07bab 03/27/87   10:00   (1200   133000   14   07bab 06/16/87   14:21   (1220   13000   133000   14   07bab 10/12/87   12:38   (1220   13000   132000	_	580		•		2.1.		3 6		3 : 7 :
1   0844 06/18/87 11-21   01220   13000   02.10   01.00   01	4   67844 06/16/87 14:21   (1220   43000   14   67844 10/12/87 12:38   (1220   13800   18800		583				3		919		2 :
1   07844 10/12/87 12.38   01200   02.40   04.58   05.00   04.30   04.20   04.10   04.75   04.00   04.58   05.00   04.30   04.20   04.10   04.75   04.00   04.58   05.00   04.30   04.20   04.10   04.75   04.00   04.58   04.50   04.30   04.20   04.10   04.75   04.00   04.58   04.50   04.30   04.20   04.10   04.75   04.00   04.58   04.50   04.30   04.20   04.10   04.75   04.60   04.50   0	4   078&& 10/12/87 12:38   <1220   138000   38001 12/25/85 09:05   <1200   08&D 11/22/85 09:05   <1200   <13000   10/25/85 09:05   <1200   <13000   11/25/85 09:06   <1200   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000   <13000		580				2 (2		17.1		<b>3</b> :
9   0300   117273 0   03   04   04   04   04   04   04	9 08001 12/23/85 09.05 <1200		(0.530				2 7		9 0		2.5
50   08,00   11/22/85 59:00   c1200   c1200   c2.40   c1.40   c1.80   c1.30   c1.20   c1.10   c1.70   c1.00   c2.60   c1.30   c1.20   c1.10   c1.70   c1.00   c2.60   c1.30   c1.20   c1.10   c1.70   c1.00   c2.60   c1.30   c1.20   c1.10   c1.70   c1.60   c2.60   c1.30   c1.20   c1.10   c1.70   c1.60   c2.60	50	_	(0.580		•		3.5		310 67		
10 08400 04/72/86 10:45   41200   41300   42.40   41.40   40.80   45.00   41.30   41.20   41.10   41.20   41.10   41.20   41.10   41.20   41.10   41.20   41.10   41.20   41.10   41.20   41.10   41.20   41.10   41.20   41.10   41.20   41.10   41.20   41.10   41.20   41	66		70				•				
11   08ADD 04/02/86 10-15   01200 141000   02.40   01.40   06.580   05.00   01.30   01.20   01.10   01.10   01.10   01.10   01.20   01.10   01.20   01.10   01.20	11   08ADD 04/02/86 10:45	_	<0.580	₩.	36						£ .
11   03ALD 06/17/86 09:00   (1200   12000   (2.40   (1.40   (0.580   (4.50   (1.20   (1.20   (1.70   (1.60   (0.510   (1.20	11   03AED 06/12/86 09:00	_	(0.580				c1 7è		0.5		21.17
11   0.6480 09/04/86   11:00   412700   42.40   41.40   40.580   45.00   41.30   41.20   41.70   41.60   40.660   41.60   41.60   41.70   41.60   41	11	_	<0.580			Ī	20		0.00		
11   08400 13/28/87   11:00   41200   13300   42:40   41:40   40.580   45:00   41:30   41:10   41:20	1	_	<0.580				<1.70		(0.510		91.10
11   08440   05/16/87   13.00   11800   02.40   0.140   0.050   0.5 00   0.130   0.170   0.170   0.1 0.0   0.1 0   0	11	_	٠٥ 580		-	•	(1,70		60 810		2
11   08400 19/16/81 12:37   (1220    12400    (2.40    (1.40    (0.550    (5.00    (1.30    (1.20	11   08400   19/16/81   12:33   (1220   12/200		0.530				<1.70		019 97		:: T
1   100   127/2/95   13.45   (120)   (2.40)   (2.40)   (3.50)   (3.50)   (4.10)   (1.20)   (1.10)   (1.75)   (1.96)   (3.60)   (1.30)   (1.20)   (1.10)   (1.75)   (1.96)   (3.60)   (1.30)   (1.20)   (1.10)   (1.75)   (1.96)   (3.60)   (1.30)   (1.20)   (1.10)   (1.75)   (1.96)   (3.60)	1		0 580		-		11.13		0.8.0:		::3
12.48   17.27/57   17.15   17.27   1	42 12448 11/19/85 14:15 (1200 15750 12448 05/05/86 12:45 (1200 15750 12448 05/05/86 12:45 (1200 15750 12448 05/05/86 12:45 (1200 15750 1776 12448 05/25/87 10:31 (1200 1776 1778 11:34 (1220 1776 1778 11:34 (1220 1776 1778 11:34 (1220 1776 1778 1778 177 (1200 1776 1778 1778 177 (1200 1776 1778 1778 1778 177 (1200 1776 1778 1778 1778 1778 1778 1778 1778		6.550				<1.76		915 0>		:: ;;
12448 66/16/86 12-14	3   12AAB   05/16/86   12.45   41200   65750   3   12AAB   09/05/66   12.45   41200   163050   3   12AAB   09/05/66   12.45   41200   193050   12AAB   03/27/87   10.31   41200   193050   3   12AAB   03/27/87   11.34   41220   193050   3   12AAB   09/24/87   11.23   41200   121000   13   12ABB   04/07/86   12.45   41200   121000   149   13DCC   11/22/85   09:45   41200   261060   10   13DCC   04/02/86   12.30   41200   261060   10   13DCC   03/26/87   14.14   41200   263050   10   13DCC   06/17/87   12.52   41220   254050   10   13DCC   12.52   41220   254050   10   12.52   41220   254050   10   12.52   41220   254050   10   12.52   41220   254050   10   41200		020 02				<u> </u>		013.6		::
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3   1248   12/17/86   11.15   (1200   193000   (2.40   (1.40   (0.550   (5.60   (1.30   (1.2	3 1248 12/17/86 11.15 <1200 193000 15348 63/27/37 10:31 <1200 193000 193000 15348 63/27/37 10:31 <1200 193000 193000 153 1248 64/17/87 11:23 <1220 193000 153 1248 64/17/87 11:23 <1220 193000 153 1248 64/07/86 12:45 <1200 121000 15100		06.230				3 ( 7 t	96.17 17	3		
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### **通過企業 建设设施运动 电影**

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经国际股票 医心管医院心室 医结束

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# ENTIRONMENTAL SCIENCE AND ENGINEERING, INC. DATE: 05/18/88 PAGE 14

### REA SUBPACE MATER

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at e (a ,) (a ∈ (	~ <b>r</b>	22/01/43	0.77.	104030	<b>₽</b>	<b>9</b>	c0.580	45.00	0.13	<1.20	d. 10	61.7	(1,00	019.0>	41.20	01
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Crows Crows	OC) -	38/38/35	<1700	98589	(2.43	04-15	(0.533	45 80	(1,30	<1.20	=	2 T		60.610	207.7	2
200	mo ·	98/90/88	<1200	93303	(7.43	41.40	c0.580	66,33	CT 30	cl. 20		2 7	0 10	019 07	3.1.	2 -
14051	**	33888 12/11/26 88/E	<1203	175000	(2,40	0	c0,580	\$0.53	(1)	c1 20	11.13	(1.70		019 07	3.1.	
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141031	4873	33183 10/23/81 10 55	<1220	133903	(2.48	01.40	<0.530	(5 00	¢1.30	<1.20	4.10	41.70	41.00	c0.610	<1.20	

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F.3 GC/MS ANALYTICAL RESULTS



GC/MS TRIP BLANK DATA

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Y 1 3 Trate			TCLEE	TROLE	3N371X-W	0P-11L	DBCP	DCPD	BCHD
10N ( 100			7/9A	1/90	1/30	16,1	1/30	7/90	1/90
Fig. 58P.	*	SAMPLE 10 DATE TIME							
14:54	C.	98.14.98	41.0	8.15	6.13	62.0	64.8	42.8	3.15
TATERS	~	98 50.98	61.19	6.15	41.0	6.20	64.8	¢2.0	8.1.
14 15 MC	s		61.0	6.1.3	8.15	6.5>	4.8	62.8	<1.8
014 T	ø	86, 23 8b	8.13	8.1>	9.1>	62.0	<4.0	62.0	41.0
	۲.	The 7 86 24 56 58, 82	8.17	61.9	41.6	8.5>	<4.0	8.5>	8.15
141540	70	TSAS 86/24-86 88:00	9.17	8.1.	9.1>	(2.8	44.8	42.0	4.1.8
014 F)	7	Thay be to be used	6.15	8. I.S	8.15	6.25	64.6	<b>8</b> .5>	8.1.
74.754	1	15x18 86/27, 86 88, 80	8.15	9 : >	61.6	42.8	<4.0	42.6	41.8
1.11	-	15,11 86/30.86 88:52	<b>*</b>	<1.8	6.15	(2.B	<b>9. +</b> >	42.0	9.15
1414	7	97, 31, 86	61.15	61.0	8. T>	42.B	<4.0	62.0	41.8
7.0.7	~	88, 24, 86	61.6	41.0	6.15	9.0	8.+>	67.7	61.8
	-7	89. 3. Se	9.17	8.1.	9.1>	62.0	64.6	62.6	41.6
14750	S		9.17	9.1>	6.15	8.3	4.8	42.B	. i.⊌
14750	ç	B9:84	<1.0	9.15	61.8	9.2>	9.4	6.5>	41.6
14180	,	99 95 86	61.6	8.1.>	6.1>	<2.8	8.43	8.3>	9.1>
14150	70)	d9 35 86	6.15	9.1.	41.6	42.8	9.4>	6.5.	41.6
1. PTEC.	7	98 71/68	9.1>	8.15	61.6	6.25	<4.8	45.8	41.0
.61+:	T	98-51 68	0.15	8.15	9.1>	62.0	64.6	<2.0	9.1.
0914	3	49, 17. at	9.1>	9	6.1.9	62.50	9.4>	(2.B	e. I.
¥ 1 - 1	=	99.10.60	p. 1>	9.1.	9.1.	8. C	44.8	45.0	41.6
14:160	2		. I. G	< 1.8	9.1>	6.5>	(4.8	62.8	6.13
19.7	=	99:72 16A	<1.8	 	9.15	<2.0	4.8	<2.8	8.1.8
0914:	-	89 23,86	6.15	₽. [>	61.0	9	64.6	<2.8	. i. 6
14160		89, 24, 86	0.15	6.13	61.9	65.0	64.6	62.0	9.I.
1944	2	887.26 BB	4.1.B	61.6	6.1.	(2.B	64.6	(2.8	Ø.1.
74,167		98:52/60	0.17	9.13	<1.8	<2.0	8.4	<2.8	s. ; >
507.77	รั	85,45 B7	9 1 >	9.1	9.1>	8.5>	<4.8	42.B	9.1>
FOR ) + + 1	.,	85:86 · 87	\$.1.	Ø.15	41.8	62.8	64.8	<2.8	Ø.15
(SK)++1		163 85, 06, 87 88, 89	6.15	8.1.8	8.1>	9. S	63.8	41.15	3.1.
の分割しなすだ	, i	184 65, 11767 64:04	9 I >	. i.s	<1.0	(2.0	<3.6	7.1	Q.1.8
(C)		185 85/12/87 88:88	61.8	41.8	61.9	9.3	<3.8	- T	61.8
でのあったなど	5	156 85/13/87 87:52	9.1.	61.8	9.1>	42.0	43.8	41.1	4.1.8
Eの1つサナム	ټ او	TB7 85/16/87 88:83	61.6	6.1.9	61.6	42.B	43.8	4.1	9.1>
E0#3774	 u )	TER #5/19/87 08:84	8.1>	61.8	41.8	<2 .u	(3.8	4.1	¢1.0
* 1. T 1. T 1.		76.50 Cd. 00 Cd. 01.75	0 77	;	-	* ( )	0 01		:

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34381	CLC6HS	UC/L		42.8	62.6	(2 · B	£ (2)	5	8 0	(2.8)	6 6	(2.8	<2.0	(2.9	42.8	\$ . Z >	(2) B	S	(2.B	(2.8	<2.0	⟨2.0	<2.0	45.0	<2.B	65.8	<2.8	₹5.8	<2.8	42.8	₹2.8	(2.1	<b>4</b> 2.1	(2.1	- 0		2 - 2	(2.1
34616	Total N	በር/୮		8.1.5	<1.0	6.5	8	s = ->	<b>6</b>	9.17	8	8.1.5	9.1>	9.1>	61.0	-	6.15	6	8.0	41.0	61.6	61.6	41.8		<1.0	<1.8	41.8	Ø.1.	9.1>	9.1>	<1.8	<1.8	9.1>	9.17	. s		3 5	61.6
34546	7.12DCE	1 90		<2.0	42.0	(2.8	8.5	\$ 2>	8	(2.8 (2.8	(2.B	(2.6	(2.8	67.5	(2.8	<2. B	(2. B	<2. b	8.2>	<2.0	62.8	<2.0	(2.8	<2.0	<2.B	<2.0	<2.0	<2.B	(2.8	(2.8	<2.0	<1.2	41.2	<1.2	(1.2		÷:::	<1.2
32102	* 173	חייות		(2.0	(2.8	<2.0	62.0	(2.8	(2.8	(2.6	(2. u	(2.8	<2.B	62.8	(2.8	<2.0	<2.6	<2.8	<2.8	<2.8	(2.8	45.8	(2.B	C2.0	65.8	(2.8	67.75	65.0	<2.B	8.5>	<2.6	<1.5	<1.5	<1.5	3		: : :	3.5
32 106	CHCL 3	1/90		<1.08	<1.00	41.00	69.1>	198	68 1>	41.00	41.88	<1.60	69.1>	41.88	<1.00	14.3	68.15	41.68	88.15	<1.00	<1.60	<1.08	<1.88	41.88	41.88	(1.88	99.1>	<1.08	<1.60	88.1>	<1.00	<1.08	<1.08	<1.00	99.1>	98.15	22.12	68.15 (1.88
34423	FIHILL	1/9n		(5.88	<5.88	<5.88	<5.08	<5.88	<5.00	<5.88	<5.88	<5.00	68.69	99.9	5.88	6.79	6.41	<5.88	45. BB	<5.00	<5.88	(5.88	8.45	<5.88	<5.88	<5.80	(S.BB	<5.88	45.00	45.00	45.88	15.9	(4.80	<4.80	<4.88	(4.8B	- <del>-</del>	5.72
34511	112701	1/90		3. T.	61.9	61.6	9.1>	0.1>	< 1. B	<1.0	9.1>	<1.0	61.6	6.L>	61.0	<1.0	61.6	9.1>	8.15	6.1>	8°T)	6.1.5	61.8	8.1.	8 · 1 >	W.1.>	9.T>	6.L>	9.15	0.1>	9.15	61.6	61.19	61.6	9.1.	9.1>	877	9.1
34506	111700	1/90		C1.8	4.15	<1.8	3.5	41.0	9.1>	61.8	9.15	0.15	9.1>	8.15	9.1>	Ø.1.9	8.15	8.1>	9.1>	3.1.6	9.15	8.15	8.L>	9.1>	G. 15	8.1.	9.1>	e1.6	Q.1.	41.15	<1.0	<1.6	41.8	8.15	B. (.)	9.0	5.7	\$
34531 #8	12DCLE	1.30		61.8	6.15	61.0	<1.0	61.15	<1.8	<1.0	61.0	<1.8	9.1>	61.8	61.15	9.1>	61.0	8.15	Ø.1>	41.0	41.8	B.15	<1.6	61.8	9>	S. I.	(1.8	9.15	¢1.3	9.17	<1.0	61.15	8.15	<1.0	<1.B	8. C	9.17	9.15
34496	11DCLE	٦٠ )n		8.5)	8.35	8.5	42.8	62. B	3 >	67.75	8 .	62.8	42.B	8.35	8.55 8.55	9 ()	62.8	8°.75	62.B	K2.8	9. g	8 Z>	B (3)	9.C	62.8	0.55	(2.B	9	(2,4	9 ?>	42.8	62.0	8.33	\$. 3	8.53	8.5	<2.0	3.3
81568	SONO	1.90		9.6	(3.W	3 5 >	€3.0	<3.8	K3.8	€3.8	C3.18	(3.8	<3.8	9 57	(3.B	(3.6	€3. <b>B</b>	<3.8	< 3. U	₹3.8	3.6	₹3.6	<b>₹</b>	(3.0	9. (3.	43.B	9 : S	6 . B	<b>5</b>	< 3. B	<3.6	<2.5	<2.5	<2.5	\$7.5	<2.5	<2.5	<2.5
81596 88	#18x	U6./L	,	(2. <b>8</b>	₹5.0	₹5.8	67.8	₹5.8	45.8	62.8	42.8	(2.6	8.3 3.8	<b>9</b> .	65.8	₹5.8	42.8	62.8	62.8	₹5.8	8.5	€2.8	8 9	<b>€</b> 7.	9.3	9	<b>9</b>	s. ,	<b>39</b>	<b>9</b> .	<b>9</b>	<b>3</b> 0	<b>8</b>	87.5	<b>9</b>	×2.8	₹5.8	42.8
34636	BEN"ENE	:0: :0:0:		9. T >	0.15	8 T>	8.15	0.17	0.15	9.1.V	61.8	<1.8	<1.8	61.9	8.1.	41.B	41.8	9.1>	6.1.8	8.1.	9.1.>	9 T	9.7	. i.e	9.	50 	<b>9</b> :	<b>5</b>	8. T	9 .	9.15		4.1	1.5	1.15	4.1	41.1	4.1
34371 88	[]H16EN]	1. 90		9.17	9 17	5 7	8 17	9 1 >	41.0	6.1.9	8°17	9 1 >	917	5 7	<b>9</b> 1 >	B	8.15	9>	÷	9 C	₹. 3	- -	<del>-</del> 5 :	<b>9</b> :		٠ ت	<b>5</b> 5	s :	<b>s</b> o :	9.	8.15 (1.8	9 7	61.15	9.15	8.15	3 T.V	5 7	<1.8
			DATE	99 84 99	96. 65 86	vt 12.86		96,24,86		86 - 26 - 86	98.737.86	8£ 38 86	87. 31. 8t	98. 28. 86	83 9A 78 58	38 E0:60	98 to 68	49.85.86	69 68 BC	48 / 12 86 88	89 15 B6 de	98.11.80	38.81.60	98 98 61 64	28 27 KB	89. Z3 86	1515 69,74756 66:06 15:4: 00:04:04:04:00	09.707.60	98 57 59	65. C3. B7	82.86.87	/ H. H. H.	95.11.87	65.12.87		T8 85/18/87 88.48	TEG 05/19 87 00:00	15:10 73:60 to 01:20
13000 TIMES	· 计二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十			· · · · · · · · · · · · · · · · · · ·			- 144 - 144 - 144	14214;	10 JAC 17		21 1-41-1-1		74 742.5	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	70.7.	5 39:4:			30 31.75							70.7			/1 /0.7		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	<b>,</b>		T		95 C.W. 1884	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	444,403 59

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3RD QUARTER FY 1986 TASK 4 GC/MS CONFIRMATION DATA

FIELD GROUP NUMBERS TC44. T4BWC. AND OPW2C ARE GC/MS RESULTS

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100 C. A. A.		1,1,1,1	טפנ דר	37.32	96.146	43.00 C.C.	37304	37370	מטנ ער	99510	76564	48363	79586	21518	13586
1911 Jacobe		STAP	HECPD	AL DRIN	13604.1%	P. P USE	CIELDEIN	NOK-1	100 . 4 4	SONO	118 1 4-04A	90 HIII-1	BD VEd /	80.7	Bil
		1 7:1	1 90	1/90	1-10	nr :	נול ז	-1 -3:	1/90	1,50	1.30	1/70	1/9D	7590	7.51
# A. (1)	SAMPLE TO DATE TIME								•		•	, )	5	2	3
· 17.	VICTO 00 25 86 19.50	(5.7	411.8	64, 78	65.50	64.10	44.70	47.69	a.ai>	3.00	c6.16	25.4	<14.8		617.0
5 .	G1978 BC. 25 BC 18.38	-	0,0'0>	868.85	ยสน สว	< 0.05 :	0.00, 0.00	<0.052	ព/ ព ព .	<1.8W	4.96	33.5	<1.39		<4.20
EGT .	80 93 K7 CA	=	ର ଓ ଓ	6 B B 18	693 62	<0.05	690.00	<0.052	6,0.9	<1.80	C2.80	<1.18	41.30		(4.20
i i i i i i i i i i i i i i i i i i i	11002 00 74 BB 08:45	~	8.1.5	82 +>=	*(5,70	• < 1 %	B/ 574	33.60	a 91	38 F	• (6.18	*<11.8	#<14.8		•<17.0
7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	et. 23 - 86 u9	₹.3°	9 10	9, 5	55 SS	57 TO	₹. <del> </del>	47.68	610.0	63.00	et 19>	<11.8	<14.0		417.8
1) V	We .4.86 by	₹,	9.3.83	676.05	(6, 96)	. 50°a>	(B. 968	258 B2	979.8	<1.80	(2.30	<1.18	<1.30		<4.20
· · · ·	98 /7 90	( <del>.</del>	8 T T S	14.70	65 54	64.70	64.78	03.60	<10.0	<3.86	(6. 1H	<11.6	<14.0		<17.0
4	38.	=	976.97	CB. B/B	690'60	18,053	<0.00 s	CO. 952	. U. U7tt	<1.80	<2.00	91.	<1.30		(4.28
· · ·	-	6.9	0.115	64.78	NG 55	<4.76	64.10	0.68	(10.0	63.03	c6 14	<11.0	0.410		<17.8
T .	Ut. 25 86	=	6.0.0>	0/0.0>	690.05	<0.05	46.069	50.05c	0/07	<1.84	<2.88	(1.18	61.50		<4.20 <4.20
i i	u6 23 86	ر:غ	۲. ۱. ۱.	(4.78	96.3>	(4.78	37.45	13.60	0.81>	<3.06	(6.18	611.9	<14.0		<17 B
* ;	Ot 23 86	E.	61.0.05	60. N/B	<0.00 (B)	<0.05	0.437	550 BY	67.6	41.86	(2, 98	CL. 18	<1. 1M		64 29
ر تو د د د د د د د د د د د د د د د د د د د	Ut 23 b6	* · \$	<11.0	44.78	65.9B	(4.78	44.7M	(7.68	< 10.0	<3.08	(6.18	611.6	×14.0		87.17
i E	38 - 30	=======================================	0.0.0>	40.878	(6.86.8	< B, 053	6.239	<0.852	6.678	61.80	<2.00	S	88.10		(A 26
ケーチ	96 24 BB	1.5.7	9.112	64.78	96.55	<4.70	(4.78	<7.68	C10.19	<3.80	(6, 18	8.1.12	2 41.5		N (1)
7	Ut. 24 86	=	6,0.0>	6/6.97	60.060	40.053	CB. 066	589.85	67.67	<1.80	<2 68	3	<b>3</b> . 1.		0.4.7
140	1.' 86	£. 37	<11.0	<4.70	45.98	(4,78	64.78	47.60	N 91 >	88 5>	97	8	5 7 7		07:17
14(8 21	. 12 86	-17	60 N 0	40.078	<0.00	<0.053	(9, 60)	58.85	H/H H/	##	() Bu	51.7	97.57		0.717
라 기간.	11. 12. BE	£ . 3 .	C11.8	(4.76	56.35	64,76	44.76	(A) (A)	8 813	C + MM	56.18 C6.18	31.7	5 51.		07:45
[2] # J# .	2	115	SE 438	868.87	(8, 950	< 0. u5	40,000	<8.0.52	67.87	02 C)	\$ C	5.7.7	5.5		90.17
1400	26. 26. 86	659	<11 s	64.78	65.39	64,70	64.76	(7.68	< 10.0	88 57	(f. 18	2 × C	5 70		9 7 1 7
75 71)77	96 . te. 86	¥	< 0. 350	cu. 358	<0. 403	< W. 265	50.500	69.268	€ 8.35¢	88.17	3.64	2.2	3: T		20.00
31 374	ut 12.86	₹.	• = =	<4.70	CF. 930	27.40	64,70	47.68	410.14	00.00	(6.13	9717	014.0		87.13
्र ज	et. 12 8t	3.	<0.0.0>	0.187	690.00	14.852	66.068	CB. 052	979.0	<1.80	<2.00	\$1.15	<1. 10 <1. 10		24.20
± 1	# 7	<b>3</b>	9.115	<4.70	96.50	(4.70	4.70	67.60	<18.8	3.56	9.36	43.7	. <del>.</del> .		C17.18
1	1	12.5°	76.1	(W. 788	(a) a6a	< 0.538	<0.060	60.524	va. 700	<1.80	15.6	78.5	££.3		29.1
-	<u> </u>	1000 ·	9 3	(4.76	3	64.73	64,74	30	410.4	<3.00	46.18	0.115	<14.8		(17.0
#	12 A AC	5545	5.5.5	6.455	(0,363	550 B2	(6 969	250 BS	10.070	68.15	2.35	2.85	2.32		(4.20
2 - T	98 61 30	5	5.11.5 	(4.76	3 . 3 .	97. <b>8</b> 5	at 15	67.68	410.0	<3.00	<6.1 <b>8</b>	45.1	<14.0		617.3
7 / / / / / / / / / / / / / / / / / / /		501.	9,9,9,	6. 192	63. 85. 13. 18. 18. 18. 18. 18. 18. 18. 18. 18. 18	13 85:	0.083	e. I :	0.855	41.80	3.71	31.2	C1.30		(4.20
5 to	30 61 33		9.11.5	97.53	₹ :	57.77	. T.	(). (s	0.9L)	C3 .00	<6.10	411.0	<14.0		<17.0
	30 61 34	; ;	3	070.07	00.00	CB 852	CD 060	( a )	67.8.35 67.8.35	68.15	C2.00	<1.10	<1.50		<4.28
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	3H 1/2 3B		5 - CV	50.876 474 33	806.37	5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	938.85	ີ (ຄ. ຄ.) ໃ	5 C C C	98.1	<2.00	<1.16	<0.30		44.20
	98. 61 38 96. 19. 196	• • • • • • • • • • • • • • • • • • •	5 115	9 5 7 7 7 7	96.17±		5/ TV	3.0	9.81.	63.68	* < 6.18	9.	*<14.8		#C17.0
55 #34;	38 1.3 86	10 C	CH 148	C 148	804 50	977.4	3 7 7 5	3 .	9.91.5	99.57	91.00	9.1.5	5. F. S		8./3
140 21	9¢ 25	, ,,	¢11.6	64.78	5	27. 43	200.00	6.733	10.148	99.17	96.27	91.15	7.17		122
3. 18.74. 1.47.	46, 25, Be	3	60.076	076.05	696.68	<0.05	S 13 S 2	628.87	5.5	99.62	2 . C	9 5	37.57		9.7.7
1400 23	UE 2., BE	2300	<11.8	64.70	<5.90	64.70	(4.70	(7 CH	2 2 2	9 0	90.49	01.17	96.17		37.47
14C# 65	37.86	3 100	<0.700	6.53	< B. End	<8.538	CO. 60B	<8.528	< 9. 7us	88 17	(2 Pa		9.FT.		20.75
1400 22	96. 25, 86	7.E	611.6	44.70	c5.90	<4.70	(4,78	47.64	416.8	<3.68	39.1	268	0.14		617 6
1404	et. 25, 86	39	40.070	40.078	(8, 660	<0.053	66.666	<0.052	40.070	41.88	32,6	342	68.1		(4.28
3 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	36,36	15.7	9.1.5	(4.78	<5.94	C4.78	64.70	67.68	0.015	C3.88	66.18	411.8	<14.0		<17.8
20 G C C C C C C C C C C C C C C C C C C	96 . Ze 96	3	997.99	<0.738 <1.738	909 A>	(B. 5)(B	<0.600	ce. 528	₹6,700	41,80	<2.00	<1.19	<1.30		<4.20
14 17 1	00:17 30	3	9 . I	8/ ' to	86.57	4.76	(4.78	47.64	<10. u	43.08	(€.16	0.115	<14.0		<17.8
14. M. C.	20101 30102 30 10002		8/8 62	60.676	858 B>	9	< 0.068	<0.055	CB. B74	<1.80	42.88	<1.10	<1.30		<4.20
37 7 7 8 F	96. 23.86		9.11.	64.78	95 . S	<4.76	4.76	47.68	e 10. u	9977)	46.18	<11.8	<14.0		417.0
60 007	2 that at 25 at 14:34	- () - 3	9/9/9/	0/0.07	48.8CH	100.05 100.05	e. 244	<8.652 (3.15)	ce. 076	99	(2.08	<1.10	<1.30		(4.20
37	9211 98 92 96 36 36	76	9 . L	9/.47	96 32	3/ .	(4.76	47.68	8 6:7	43.00	(6.18	Ø.1.6	0.410		417.8
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.¥ . <u>;</u>	<u>.</u>	38 17 90	5 :	31.2	4.5%	<11.28	41.35	47.3	C5.000	<1.18	<1.20	<1.20	<1.46	813°35	<1.76	(2.48
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	ပန	82835 86 25 86 89 82 83835 86 36 84 85 85	20 C	60.15 3.	00.15	90.17	(1.00 (1.00	S ()	5° <b>±</b>		7.52	42.80	263	61 BB	<1.88	7.84
* E 1,,	. ··	10 35 55 30 R	7.37	# 5 5	17.15	97. U	2 ; J ;	÷ :	88.53 5	<1.10	8.38	<1.20	195	40.610	61.70	5.7
	· []	96.73 at 11	9 7 T	20 T	99.17	99.77	29. TV	3 C	55.86	;	<2.80	<2.00	. E	00.15	99.15	(2.88
77	333	Ut, 23 BE 15.	00.5	5.7	17.17	1. T	2.E	70	86.57 88.57	<u>=</u>	97.17	87.17 02.00	ر د د د د	(C. C.16	9/17	9. °
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	ъ.	Ne. 24 He	60.55	00 I>	61.8d	00.15	199	3	(5, 88	2	27: 10 28: 00	97:17	55.	01.17	9 5 T V	9 7 1
		86, 24, 86	412.9	41.34	(1.21	<1.28	65	(4.5)	<5.00	61.19	<1.20	C1.28	0.48	91.9.3>	82.10	(2.48
		Ber 12. 8t	60.25	00°E>	41.80	41.00	<1.00	55.00	<5.88		<2.00	(2.00	17.5	41.00	69.15	(2.89
ar i		21,	<u>ح</u> :	<1.34	<1.21	87.15	<1.35	15.47	(5.08	<1.18	<1.20	<1.20	11.6	(6.618	<1.70	(2.48
		49 71 94 11 11 11	88. U	60.15	<1.00	00 T>	<1.48	00°25	<5.00		(2.88	<2.00	<1.80	<1.00	<1.60	<2.80
		Mt 12 85	6	CL. 34	<1.21	<1.28	<11.35	<del>.</del>	C5.00	61.19	<1.20	67.15	<1.46	<6.t18	<1.78	<2.48
	2.	υ . π :	99.77.	88 T	99.1>	CL.088	00.1>	96	<5.00		<2.00	(2.60	88. f>	<1.08	69.1>	42.80
		20.07.00	6.77	# : 	41.21	87.1×	SF : 1>		55.08	41.18	<1.28	61.20	41.46	CB. 618	<1.70	(2.48
		23177 067 12 GC 13 BU	99.7	50 T	88. 1.	99.17	99.17		<5.00		<2.00	<2.00	1.99	38.1>	<1.68	<2.00
		16 17 K6	V 1 1 1	7	7.7	87.17	C1.35	(4.3)	<5.86	C1.18	<1.28	(1.28	41.46	(0.410	<1.70	<2.48
		58. 21/98	an	7.04	2 7 1	59.17 59.50	89.17 10.17	4.7.4 C. C.	75.	;	9.4°	25.88 3.53	39075	115	<1.00	<2.88
		98.61/10	3	98.15	98.13	(5.5)	(1.37) (1.88)	35.50	571	91.19	3.78	97.1	98527	< 6. £ 16	9/10	<2.48
		19 46	6.515	#.0	17.15	<1.28	<1.35 <1.35	(2.47	90.55	C1.18	90.25	96.13	58	99.17	39.17	99.27
		BC: 19786	80° 58	51.00	<1.88	<1.00	99.1>	62.00	(5.00	•	65.68	(2.98	00.15	5.2.7	0.17	2
		98, 61, 98	6.11.	<1.34	<1.21	<1.28	<1.35	12.17	(5.00	<1.18	<1.20	<1.28	54.10	1.59	<1.76	07:30
	<u>.</u>	19 86 19 86 19 19 19 19 19 19 19 19 19 19 19 19 19	80.77	<1.08 	v1.6v	1.00	<1.03	52.00	(5.811		42.00	<2.00	30.1>	80.1>	<1.00	<2.80
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		85, 29 HE	10	2 7.00 P.	3.7	8 5 5 5	5.17	7.0	88.35 5.35 5.35 5.35 5.35 5.35 5.35 5.35	¢1.18	<1.20 <	CL.29	# : :	<0.018	<1.76	<2.40
	5.0	86 19 B6	00.25	<1.00 <1.00	60.15	39.15 <1.88	99.17	88.0	88.5 88.5		90.77	39.77	30.17	88. T	999	98.57
	95	86. 19 86	<12.9	<1.34	<1.21	<1.28	(1.35	1+ 27	<5.08	<1.18	<1.20	<1.28	564	(6.618)	90.7	1.33
		بن بور بور	99°C	00.15	(1.80	<1.68	<1.00	90.55	<5.00		<2.00	<2.00	39.15	<1.66	<1.60	<2.80
* C		146.37	6.717	£	(1.21	<1.28	<1.35	<2.17	68.89	<1.18	<1.20	<1.26	<1.46	<0.610	<1.78	<2.40
	n un	00 /2/00 04 /2/ 46	7.36	- 98.5 7 5.5	25.5	99.17	(I.88	42.68 	99.5>	:	<2.00	5.15	3B. [>	140	<1.68	68.5>
1400	2.5	86.75.38	6.31	9.0	97.21	87.17	1	7.6	88.35 3.35	<1.18	<1.28	<1.28	<1.46	2.25	<1.78	(2.48
	· • <u>•</u>	98, 52, 38	0 0 0 0	2 . 17	10.10	71.00	59.17	99.77	7.01	;	99.75	42.08	99.1>	99.1>	×1.68	62.88
	<del>,</del>	96.36.86	() ng	<1.38		97:17	27.5	/ <del>1.</del> 2	89. 99. 99.	61.19	97.13	92.15	94.17	< 8. ¢ 16	97.17	<2.48
		97 98	412.9	<1.34	41.21	<1.28	\$5.15 CL.35	(C) 47	(5. 28. 28. 28.	31	90.17	00.77	10.00	99.17	00.17	5
	5	86,237	88.35	<1.00	<1.00	<1.00	99.1>	42.60	45.0B		27:17 27:17	03.15	30 ()	910.0	96	1 5
	9	3 96, 23 '86	412.9	<1.34	<1.21	<1.28	<1.35	<2.47	<5.00	<1.19	C1.20	41.28 41.28	37 ->	60 1.00	82. L2	(2.48 (2.48
	9.	26084 86/23 86 15:57	60.75	16.4	<1.03	<1.00	(1.00	(2.00	<5.88		42.00	<2.00	98.1>	41.08	97.17	<2.00
	۽ جي	96 23 EC	6.715	19:4	<1.21	<1.28	<1.35	(2.47	65.08	<1.10	11.28	<1.20	<1.46	<0.610	<1.78	<2.48
14 6 14 1 17 1		2012 By 21 By 14:28	90.7	19.17	(1.00 (1.00	<1.66	99.1	<2.00	<5.00		32.08	<2.00	27.0	41.66	<1.00	<2.00
		98 77 98 0	5.7.	<1.34	<1.21	(1.28	<1.35	(2.47	45.00	41.18	<1.28	<1.20	21.1	<0.610	<1.70	C2.48

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0.5. St. B 19.3 B         2.7         16         4.7         4.7           0.5. St. B 19.3 B         4.15         4.15         4.17         4.1		=						
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CC 27 FOR 1910 CO.130         CC 37 CO.130         CC 3	= =	4 7	co. 138	4	5	न इ.क	( 4 )	3
the 25/26 delight         415         44.0         44.7           the 25/26 delight         41.0         41.7         44.7           the 25/26 delight         41.0         41.7         44.7           the 25/26 delight         41.0         42.3         44.7           the 27/26 delight         41.0         42.3         44.7           the 27/26 delight         41.0         42.3         44.7           the 27/26 delight         41.0         42.3         44.7           the 17/26 delight         41.0         42.3         44.7      <	: 3	) 40 E	<0.138	;		(4.4)		?
46. 25. 96 19.30         49.31         49.31           47. 25. 96 11.26         41.26         43.3           47. 26. 11.26         41.26         43.3           47. 26. 11.26         41.30         43.3           47. 27. 66 12.55         41.10         43.3           47. 27. 66 12.55         41.10         43.3           46. 27. 66 12.56         41.10         43.3           47. 27. 66 12.26         41.10         43.3           48. 12. 66 49.37         41.13         44.3           48. 12. 66 49.37         41.13         44.3           48. 12. 66 49.37         41.13         44.3           48. 12. 66 49.37         41.13         44.4           48. 12. 66 49.37         41.13         44.7           48. 12. 66 49.37         41.13         44.7           48. 12. 66 49.32         41.3         44.6           48. 12. 66 49.32         41.3         44.6           48. 12. 66 49.30         41.14         44.6           48. 12. 66 49.30         41.14         44.6           48. 12. 66 49.30         41.14         44.6           48. 12. 66 49.30         41.14         44.6           48. 12. 66 49.30         41.14         44.7				<15	64.8		1.4.7	0.53
10   12   12   13   14   15   15   15   15   15   15   15			ce. 130	-	;	18.31	-	:
17.   17.			92 - 83	5	4.4		7	a
00 25 66 15:55         (0.130)         (15 (4.0)         (9.31)         (4.7)           00 24 66 10:05         (0.130)         (15 (4.0)         (9.31)         (4.7)           00 12 66 (9.32)         (15 (4.0)         (9.31)         (4.7)           00 12 66 (9.32)         (15 (4.0)         (9.31)         (4.7)           00 12 66 (9.32)         (15 (4.0)         (9.31)         (4.7)           00 12 66 (9.32)         (15 (4.0)         (9.31)         (4.7)           00 12 66 (9.32)         (15 (4.0)         (9.31)         (4.7)           00 12 66 (9.32)         (15 (4.0)         (9.31)         (4.7)           00 12 66 (9.32)         (15 (4.0)         (9.31)         (4.7)           00 12 66 (9.32)         (15 (4.0)         (9.31)         (4.7)           00 12 66 (9.32)         (15 (4.0)         (9.31)         (4.7)           01 12 66 (9.32)         (15 (4.0)         (9.31)         (4.7)           02 12 66 (9.32)         (15 (4.0)         (4.1)         (4.1)           03 12 66 (9.32)         (15 (4.0)         (4.1)         (4.1)           04 12 66 (1.32)         (1.10)         (1.10)         (4.1)         (4.1)           05 12 66 (1.32)         (1.10)         (1.10) <td></td> <td></td> <td>20.00</td> <td>(115</td> <td>44.0</td> <td>77:57</td> <td>(4.7</td> <td>62.0</td>			20.00	(115	44.0	77:57	(4.7	62.0
0.6.24-06 10.05         C15         C4.0         C4.7           0.6.24-06 10.05         C0 130         C15         C4.0         C4.7           0.6.25 00 0.03         C15         C4.0         C4.7         C4.7           0.6.12 00 0.03         C15         C4.0         C4.7         C4.7	÷	ç n	vt. 130			18.83		
4 bc 10 bc 5         (b 13)         (4.0)         (4.1)           4 bc 10 bc 6         (b 13)         (15         (4.0)         (4.1)           4 bc 12 bc 6 bc 7.2         (b 13)         (15         (4.0)         (4.1)         (4.1)           4 bc 12 bc 6 bc 7.2         (b 13)         (15         (4.0)         (5.3)         (4.7)         (4.7)           4 bc 12 bc 6 bc 12         (b 13)         (15         (4.0)         (5.3)         (4.7)         (4.7)           4 bc 12 bc 15 bb (6 bc 12)         (b 13)         (15         (4.0)         (5.3)         (4.7)         (4.7)           4 bc 12 bc 15 bb (6 bc 12)         (b 13)         (15         (4.0)         (5.3)         (4.7)         (4.7)           4 bc 12 bc 15 bb (6 bc 12)         (b 13)         (15         (4.0)         (4.7) </td <td>ąç</td> <td>98</td> <td></td> <td><b>\$</b>!&gt;</td> <td>4.6</td> <td></td> <td>(4.7</td> <td>Q B</td>	ąç	98		<b>\$</b> !>	4.6		(4.7	Q B
Very	<u>.</u>	3 8	08 1 00		;	. (5. 3)	-	
Very	ن د :		57.	( <u> </u> )	s. •	3,	- -	9 
05.12.06 0 V.28         09.130         09.31         04.7           05.12.04 0 V.28         09.130         0.15.01         0.4.7           05.12.05 0 V.130         0.15.01         0.13.01         0.4.7           05.12.05 0 V.130         0.15.01         0.13.01         0.4.9           05.12.05 0 V.130         0.15.01         0.15.01         0.4.7           05.12.05 0 V.130         0.15.01         0.15.01         0.4.7           05.12.05 0 V.130         0.15.01         0.4.0         0.4.7           05.12.07 0 V.130         0.15.01         0.4.0         0.4.0           05.12.07 0 V.130	ن دعاد		961.05	(15	8.43	16.6	14.7	0.5
06. (7. v 6. 0 v 4.)         (15. 4.0         (4.7)           07. (15. v 6. 0 v 4.)         (15. 4.0         (4.7)           07. (15. 4.0         (5. 31         (4.7)           08. (15. v 6. 0 v 1.)         (15. 4.0         (5. 31           08. (15. v 6. 0 v 1.)         (15. 4.0         (5. 31           08. (15. v 6. 0 v 1.)         (15. 4.0         (4. 7)           08. (15. v 6. 0 v 1.)         (15. 4.0         (4. 7)           08. (15. v 6. 0 v 1.)         (15. 4.0         (4. 7)           08. (15. v 6. 0 v 1.)         (15. 4.0         (4. 7)           08. (15. v 6. 0 v 1.)         (15. 4.0         (4. 7)           08. (15. v 6. 0 v 1.)         (15. 4.0         (4. 7)           08. (15. v 6. 0 v 1.)         (15. 4.0         (4. 7)           08. (15. v 6. 0 v 1.)         (15. 4.0         (4. 7)           08. (15. v 6. 0 v 1.)         (15. 4.0         (4. 7)           08. (15. v 6. 0 v 1.)         (15. 4.0         (4. 7)           08. (15. v 6. 0 v 1.)         (15. 4.0         (4. 7)           08. (15. v 6. 0 v 1.)         (15. 4.0         (4. 7)           08. (15. 0 v 1.)         (15. 4.0         (4. 7)           08. (15. 0 v 1.)         (15. 4.0         (4. 7)	35		<0.138	!		(9.31	:	
12. Feb 28:47         (9.130         (15. Mag)         (3.31         (4.4)         (5.31         (4.7)         (4.3)         (4.7)         (4.3)         (4.7)         (4.3)         (4.7)         (4.3)         (4.7)         (4.3)         (4.7)         (4.3)         (4.7)         (4.3)         (4.7) <td>e e</td> <td></td> <td></td> <td>\$15</td> <td>9. <del>t</del>&gt;</td> <td></td> <td>&lt;4.7</td> <td>8.55</td>	e e			\$15	9. <del>t</del> >		<4.7	8.55
We   12-re   15-rw   We   15-re   15-rw   We   12-re   12-rw   We   12-re   12-rw   We   12-re   12-rw   We   12-re   12-rw   We   Me   Me   Me   Me   Me   Me   Me	<u>ن</u> 2		c0.130			6.31		
(6.1) E6 09:12         (15. (4.0)         (3.1)         810           (6.1) E6 09:12         (1.5)         (4.0)         (4.7)           (6.1) E6 09:14         (1.1) E6 (4.0)         (4.1)         (4.1)           (6.1) E6 12:41         (6.1) 13         (4.0)         (4.1)           (6.1) E6 12:41         (6.1) 13         (4.1)         (4.1)           (6.1) E7 (6.1) 13         (4.1)         (4.1)         (4.2)           (6.1) 14 (6.1) 15         (4.1)         (4.1)         (4.2)           (6.2) 2.66 09:25         (6.1) 13         (4.1)         (4.1)           (6.2) 2.66 09:25         (6.1) 13         (4.1)         (4.1)           (6.2) 2.66 09:25         (6.1) 13         (4.1)         (4.1)           (6.2) 2.66 09:25         (6.1) 13         (4.1)         (4.1)           (6.2) 2.66 14:25         (6.1) 13 </td <td>2 3</td> <td>نه ده تا تا</td> <td>87 L 87</td> <td>&lt;15</td> <td>\$. **</td> <td>,</td> <td>7</td> <td>5.5 5.5</td>	2 3	نه ده تا تا	87 L 87	<15	\$. **	,	7	5.5 5.5
06-12-66-09-08         07-12-66-09-08           06-12-66-09-08         01-13-08         01-15-08         04-17-08           06-19-06-01-14-08         01-13-08         01-13-08         04-13-08         04-13-08           06-19-06-01-14-16-08-01-18-08         01-18-08         04-13-08         04-13-08         04-13-08           06-19-06-01-14-16-08-01-18-08         01-18-08         04-13-08         04-13-08         04-13-08           06-19-06-01-14-16-08-01-18	29	نون د	27.	510	8.73		81.8	8,5
06 19 66 19 33         C15         C4.0         C4.7           06 19 66 10 33         C0.130         C15         C4.0         C9.31           06 19 66 10 14         C0.130         C15         C4.0         C9.31           06 19 66 12 14         C0.130         C15         C4.0         C9.31           05 29 66 09 10 10         C0.130         C15         C9.31         C4.7           05 29 66 09 10 10         C0.130         C15         C4.0         C9.31           05 29 66 09 10 10         C0.130         C15         C4.0         C4.7           06 19 66 14 12 2         C2.5         C15         C4.0         C4.7           06 19 66 14 12 2         C15         C4.0         C9.31         C4.7           06 19 66 14 12 2         C15         C4.0         C9.31         C4.7           06 19 66 14 12 2         C15         C4.0         C9.31         C4.7           06 27 766 18 12 2         C15         C4.0         C9.31         C4.7           06 28 76 60 18 2         C15         C4.0         C9.31         C4.7           06 28 76 60 18 2         C15         C4.0         C9.31         C4.7           06 28 76 60 18 2         C0.130         C4.0 <td>.96</td> <td></td> <td>6.953</td> <td>•</td> <td></td> <td>38.6</td> <td>•</td> <td>· •</td>	.96		6.953	•		38.6	•	· •
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06/25/86 09:25 <a href="https://www.nih.go/">we/25/86 09:25</a> <a href="https://www.nih.go/">we/25/86 09:52</a> <a href="https://www.nih.go/">we/25/86 09:52</a> <a href="https://www.nih.go/">we/25/86 19:57</a> <a href="https://www.nih.go/">we/25/86 19:37</a> <a href="https://www.nih.go/">we/25/86 19:37</a> <a href="https://www.nih.go/">we/25/86 19:37</a>								

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។ ១០១៩ ព្រះភូមិ្ស្តីនិកកកកម្ពៃ នេះ ខេត្តកកកកម្ពិប្រកកកកកម្ពិប្រជាពិធីការ  $\quad \quad \text{ where } \quad \text{ one } \quad \text{$ માલું કું કરા કામ કાર્યું કુમાં કહ્યું મુખ્ય હું જે જે જે તાલું જે હું કુમાં જો જો માટે જે જો મુખ્ય જો જો જો જ သောက်သည်မှုတ်သည်လက်သည်သည်မှည်မှုတို့သည်မှုတို့သည်မည်မည်မှုတို့သည်မည်မည်မှုတို့သည်မှုတို့သည် ရှိသည် မြောင်းသည်မ

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**5**3.

4TH QUARTER FY 1986 TASK 4 GC/MS CONFIRMATION DATA

FIELD GROUP NUMBERS T4CC2. T4WC2. AND OPG3C ARE GC/MS RESULTS

e ... =

98561 98 CPMSG UC/L	<4.28	617.8 64.78	417.0	4.20	<17.8	<4.28	<17.8	97.47	20.75	<17.6	<4.20	<17.0	<4.28	617.0	<4.20	<17.8	13.6	<17.0	<428	<17.0	<4.28	617.0	95.9	78.3	87.50	0.717	97.17	<4.20	417.0	<4.20	617.8	<4.20	9./IV	97.60	(42.B	<17.6	(4.20	<17.0	31.4	18.6	C4.28	<17.0	<4.20	<17.0	<4.20	617.0
81512 U8 BTZ UG/L																																														
98562 98 CPMS UG/L	<1.30	2.4.0 2.5	<14.0 (14.0	<1.30	< 14.0	<1.30	<14.8	VI.36	9.7.	C14.0	<1.30	<14.8	<1.30	<14.6	<1.30	<14.0	73.4	115	<4.30	<14.8	<1.36	<14.8	13.5	<14.8	<1.38	9.417	<11.0	<1.30	<14.0	<1.30	<14.8	<1.36	9.4.7	95.17	8 8	<14.6	<1.36	C14.0	366	408	<1.30	<14.0	<1.30	<14.8	<1.30	<14.0
98563 U8 1,4-01ТН U6-1.	<1.18	9:1:0 9:1:0	9.11.	41.10	<11.6	<1.10	9.11.	s :	a : 1 : 0	9777	<1.16	011.0	91.0	67.7	<1.18	<11.6	73.0	55.0	61.10	<11.0	C1.18	9.11.	61.15	8.11.8	41.16	97.17	8.1.7	66.1	<11.0	11.7	<11.6	5.27	2,05	6.33	54.5	62.1	34.3	46.1	31.7	35.3	<1.18	<11.0	<1.10	<11.0	<1.18	<11.0
98564 U8 1,4-0xAT U6/L	(2.66	66. Tel	(6. 10	<2.88	<b>66.18</b>	(2.90	<6.18	99.27	91.0X	(6.18	<2.08	<6.18	16.8	16.1	<2.80	<b>66.18</b>	17.9	<6.19	(2.88	<6.18	(2.88	(6. 1th	<2.80	¢6.10	99.75	50.10 C3.48	(6. 18	<2.00	<6.18	2.46	e. 1e	<2.88	9 (P)	93.3	44.	(6. 18	4.42	(6.10	7.	13.0	<2.60	<6.16	<2.00	<6.10	<2.00	<6.18
81580 U8 DMDS UG/L	41.68	23.53 C	63.88	41.80	(3.00	(I.88	99.55 50.00	80.17	96.57	(3, 6%	<1.80	<3.00	<1.84	4.33	<1.80	<3.00	61.80	<3.88	<1.89	(3,88	98.1×	3. gg	99.17	09.57	2	73.68 73.68	(5,00	C1.80	3.00	<1.80	<3.00	(1.80 (1.80	90.5	99.17	9.50		(1.80 (1.80	<3.86	41.50	<300	41.80	G. 88	<1.80	<3.00	61.80	<3.00
39388 S8 P.P00T	64.878	61.01.0	<10.0	60.070	410.6	60.076	9.81>	20.07	3.0.5	(16.6	<0.07W	410.0	<0.768	614.B	(B.B)B	<18.6	<1.40	< 10.0	<0.076	619.6	<0.076	× 16.8	8/0'B>	616.6	8 6 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7 8	, i e. e	8.01.5	<0.078	< 10.6	<0.070	<10.0	<0.078	8.81.97	20.07	CB. 788	618.8	¥	616.6	(1.48	410.0	60.030	<10.0	<0.070	< 10.0	<0.078	410.0
+9398 S8 ENDRIN UG:L	250.05	(0.052	3.68	111.822	€7.68	<0.052	0.7.68	200.07	00.75 00.85	99.	<0.052	43.5%	<0.528	47.60	<0.052	65.69	<1.04	67.60	<0.052	39.	<0.052	89.73 73.73	2.22	99.7.	0.000	63.00	07.50	<0.052	67.68	<0.052	(7.68	250.95	99./>	360.01	KB 528	<7.68	9.366	47.68	41.84	67.60	<0.52⊌	0.68	<0.052	69.5>	<0.052	69.75
39360 Sb DILLORIN UC. I	(0.060	37 . F.V	64,73	0.4.0	<4.7t	40.00A	64.78	74.70	27.15	(4.70	4. 396	64.78	<0.500	64.70	48.868	64.70	C1.28	04.70	40.06W	4.70	6.4. BEG	92. TS	3 3	9 · · · · ·	0.336	87.57 87.87 87.87	(4.78	0.164	64,70	v.112	64.70	6. 163 	9	107.0	A. 6.00	04.70	2.45	14.70	2.24	7.64	2.52	4.70	6.246	<4.70	<0.00 US	0.7.1
393.4 38 9,P*-006	10.053	40.051	# T	<0.053	₽. 3	50.05	57. E	25.00	100 00	64.70	<0.053	64.76	<0.530	44.70	68.053	64.70	41.06	64.36	<0.053	97.45	5 10 10 y	M/ T>	5 (B. B) 3	5 · · · · · · · · · · · · · · · · · · ·	20.00	3 5 5 5 5	\$ 15 E	<0.053	646	<0.053	7: } ₹	(B. 05)	07.47		(B. 530)	9, 19	, B. MS3	64.70	58.15 C1.86	64.70	< 0.053	64.14	<0.053	64.78	60.053	(4.70
98438 88 1366418	(.'. uteu	960.3	96.35	60.00	25.50	es seu	96.35 24.35	900.00	27.55	65.35	66.060	96.3>	ce, cob	48.35	60.00	65.39	61.2 <b>8</b>	65.98	00.060	96° 50	65.05.0	F. C.	930 05	2	999 97	0,000	96 30	46.06.0	(1, 90	<0.00 mes	96.35	6. 96.9 3.	96.62	20.0	18.600	66.39	830 BY	(5.50	40.068	C5 90	0.00	95.35	(0.00)	66.35	<0.00	35.55
39330 S8 ALDRIN UC L	0/0.0>	9/9/9>	64.78	<0.070	64.70	0/0.00	8/ . ty	2 76	87.53	64 76	0/0.0>	<4.78	<0.700	<4.76	60,678	(4.70	4F.1>	4.78	60.076	<4.78	9/9.9>	97.79	9/9.07	9/ 15	64. 67. Ca 74.	878.83	(4.78	991.0	64.78	40.87B	64.78	0/0.0>	9/ · F/	0/0:3	38,780	<4.78	<0.078	<4.70	<1.49	<4.78	<0.760	(4.78	69.878	<4.70	<8.8.8>	44.38
34386 S8 HCCPD UG. L	<0.070	9/0/97	411.0	66.676	9.11.	8/0.0>	8.115 6.00 8.00 8.00	3 (a. c.)	CB. 678	0.115	66.078	¢11.8	co. 766	611.6	69.078	9.11>	2.29	9.11.	48.876	\$ . I .	8 8 8 Y	9.1.5 3.1.5	197.0	9.11.6	9/9/9/	(n. n)	0.115	40.3.0	411.8	<0.070	0.11.	8/9:9/ 9/1/9/	(11.0)		< B. : 00	<11.8	< 8. 078	611.8	(1.48	611.0	<0.070	611.0	(B, B)	6.11.9	<0.078	(11.8
98551 868 0189 0189	5		65.7	3	۲. <del>.</del>	17.		1.5	: 5	15.7		1.50	1163	tus	5.	2	14.1	544	3	(5.7		3	388	9977			(3)	2	57	596	91 <del>4</del>		، ب و د		£.35.E	2504	1786	1300	656	17.0	ij	(5.7	7.	ټ. د 'ټ	110	£5. ?
9# 1 9# 20 511 # 4# 27 7	81 88 151	701 11 28 AT 70 17013	48 81 64	11. 17. 56	2	98 10 Kg	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	30 30 34	30 Km	44 83 EC	1 69 60 86	09:03:8¢	64 ds dt	6, 6, Bt	89. 25. BE	98 52 68	Ä	38 . 9 . 55	サラントロ	64 64 86	32 50 50	10 G	30 77 50			33,56,49	36. 35	0+ 19 Bt	34 19 BE	89. 22. at	89:22 et	1001 03/55 BC 10103	30 17 18 84.71 P.E.	98 (2.58	39 52 60	89.23 EE	92, 62 58	33 62 €	30 61,60	98 SE 60	17.	19.54 86	27,416 39 26 36 88:22	1701c 09 2c 8c 08.22	£ 3	27653 89119 86 88152
		4 (7.5)	2 2004:	9		77	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	2 (1)OF	5	14000	14.2	14002 8		7 (1)		3 (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)						51 2724		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	7 (1)7	- W	14(2) 23	1402 64	14.02.			20 30FC						14000 26		14005 53				14000 29		

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32102 78 CCL4 U67L	(2.48 (2.88	(2.66 (2.66 (2.48	(2.88	(2.68 13.5	16.7	89. 25 C2. 88	(2.48	89.27	(2.00	0.48 0.48	(2.48 (2.48	32.00	C2.48	(2.48	(2.08	2.66	2.73	97.77 97.77	62.48	62.48	34.25	22.48	(2.88	(2.40	8.7.0 8.4.0	<2.00	(46,8	0.48	42,00	(24B	52.00 84.00	00.55	(2.48	<2.00	(2.48
34586 78 1117CE UG/L	<1.78 <1.46 <1.46	CL.88	(1.00	<1.80 <1.80	00.15	8. T. C. 18.	B/ . ↑S	01.15 C1.78	(1.86	92°C	C1.73	<1.86	8	80.15	<1.00	<1.78	98.17	97.17 88.17	41.70	80°T>		41.78	(1.00		<1.08 <1.78	<1.00	<34.0	92.12	C1.00	9710	0012	19.17	<1.70	00'1>	<1.78
34531 78 12601 E UG-L	CB. 618 C1. 68 C6 618	(1.89 (1.89 (0.619	<1.08	00.15	80.15 80.15	88.1.4 V.1.88	613.05	<0.618		(6.61s	(E. ( ) B	221	917.85 817.85	80.17	61.00	<0.618	1.39	38.1.	c6.610	41.00	011.07	CG. (18	61.68	61.6.10	<0.618	<1.00	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	66.618	41.00	9.1.30	.100 (0.618	90.15	<0.618	41.00	<0.618
32.186 78 CHCL3 UG/L	94.12	91.9 31.9	36.8 13.3	14.6	>166	9.89	C.48	1420	BECH	1.71	26,500	> 16eug	7 T	94.15	<1.08	124	163	98.0	C1.40	98' 17	g - 5	94.15	41.00	9 <del>1</del> 7	07:12	41.00	(2E.0	< 3.08 < 1.48	<1.00	48646	00 300 (1.46	69.15	C1.40	63.15	91 1>
34546 18 112600 UCAL	C2.88	42.00 <1.20	C2.08	C2.88 C1.28	<2.86	65.55 C2.88	57 TO	61.20	42.00	87.13 27.13 28.13	5. 5. 7.	42.80	27. T	98.7.TV	42.00	3.7.1>	(2.86 (3.86	00.55	97° D	C2.00	62.17 00 C	82.15	45.00	57.TS	<1.20 <1.20	<2.00	<24. B	41.28	<2.00	6666	41.20	42.60	<1.20	<2.68	<1.20
14196 18 110CLE UG/L	<1.28 <2.88 <1.28	2.50	2.82	4.61	0.01	37.17	92.15	<1.29 <1.29	818.75 57.888	97.10 98.00	41.28	3,35	97.77 0	92.15 01.24	62.80	07.15	99.00 00.00	88. C	67.15	98° 3	07.17	07.15	96.5	97.17	<1.20	(2.88	624.0	97.17	42.88	46.08	<1.28	<2.00	41.28	65.88	07.10
14581 18 11006 1671	81.15 \$1.18	91.15	61.15	51. IS	š.	2	61.15	41.19	;	91.12	<1.18	1	91.7	61.15		¢1.19	5		<1.18	:	91.17	<1.10	;	41.1V	<1.16		<22. υ	<1.10		51.15 81.10	<1.16		<1.18		<1.1E
1/90 131411 14	68.35 88.35 88.35	5.2 2.3 3.3	65.88 65.88	65.88 65.88	98°55	6.71	99.3. 991.	55.00	65.00	8 E S	128	15e	39 C	8.5	5.80	65.00	<b>8</b> 8	<b>8</b> .0	55 88	88 S	10.00 10.00	45 80	88 S	8 S	65.488	69.55	0.100	(5,88	<5.88	61.8	(5.88	(5.00	<5.00	45.08	<5.00
1 00 100 1 00 100 1 00	437 333	34 99	10° 27	62.8d 62.47	를 () ()	. Bo. ⊘	9 5 9 0	(4.3)	27.25	1877 1887 1777	65.47	2.85	÷ 5	1. 1. 7. 7. 7. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	12. MH	(5.4)	98°3	3	<del>-</del> + :	85°C	5 5	( <del>1</del> .3)	a ( )	; si	\$2.47	45.00	95.7 8 815	<2.47	42.00	55.8 8.00 8.00	(2.47	62.00	(2.4)	89.5	\$2.47
Ypucy He He UG L	C1.35 C1.86 C1.35	20.15 21.35	<11.00 <11.35	CL, 03 CL, 35	8.15 8.5	<b>8</b> 5	K 5	¥.5	36 T)	50.TJ	<1.35	8 K		# 7	\$6.1>	₹.15	9 T	90°T>	41.35		8. D	<1.35	(H. 198	21.32 (1.88	<1.35	61.00	S 15	<1.35	<1.00	50.5	0.35	0.0.1>	<11.35	00.15	<1,35
MILLE ON THE	47.12 47.12 47.12	<1.88	<1.00 <1.26	CL.88	88. TV	¢1.64	87 T	2.85	96.17	61.15	42.15	41.48	37.17	. f.	99.15	<1.28	39.7.7 20.7.7.7	98>	87.75 13.75	38.7.7.7.7.7.7.7.7.7.7.7.7.7.7.7.7.7.7.7	84. I.>	41.28	96° U	93.17	41.28	99.15	45.48	41.28	08.15	- <del> </del>	<1.28	69.15	41.28	88.1V	11.28
Manual Menter	G.21 G.98 G.21	G1.88	0.12 0.12 1.21	8.17 2.17	87.D	(1.80	2.17 18.17	6.40	98.TV	00.1	466	01.00 12.00	17 17	0.21	(1.00	41.21	8 5 7 7	41.90	41.21	0.0.17	00.15	(1.21	88.15 12.15	(1.00	4.21	00.C	(25, W	(1.21	00.15	451 1	<1.21	00.15	<1.21	99.15	41.21
BENZENE BENZENE UG. L	CL.34 CL.88 CL.34	8.5 5.5 5.5	8.13 2.34 34.34	8.0 C.3	3.15 12.15	<1.80 <1.80	5 3. 0 0	9.3.4	23.7	60 D	3°, 12	5.15 E	1	₹	en. D	¥.∵	± ±.	61.10	4.5.	3.5	C1.00	4.34	3.7 0.0	C. 18	CL.34	a :	48.4 (27.5	2.3	C1.08	295	£.12	<1.10	<b>₹</b> .	3. U:	£
1 98 1 98 1 98	6 3D	62.5	6.415	3 77	50 TV	86.23	577	6.715	6.22	30	6.10	8.7 7.7	1 E	6 77	5.7	5.70	3 7 7 7	100.37	6 T		P1 77	617.9	5 J	90.5	6.21)	99.77.	,	6.215	961. ZV	C2C2 C23M	(12.9	E0.55	6.71)	90°C	7. 1 1. 1 2. 1
AMPLE 10 DATE TIME	523	89 18 Pt 89-17, Bt	14 - 1 HE	89.85 et	89, 85, 86 89, 83, 86	89 83 at		89. 33. ot	15.071 38.080.080.080.0 80.071 38.080.080.080.0	49 25 et	14 O FE	79778 48 80 80 70 70 70 70 70 70 70 70 70 70 70 70 70	14. Et	11) 184 BE	19. 19. 19. 19. 19. 19. 19. 19. 19. 19.	241.78 (89.22286) 14250	NY 23, 86	114 2 x Bt	25,016,09,05,86,11,00	63 19,86	19 61 .6n	48. 23. 86	16815 897.22 of 89118 26817 89 27.86 18:53	89, 22 BE	09.23, 86	TENZO NY ZATON GELAS TRANT NO TOTON OF ANTON	69.23, 80	89:29. Bt	26127 09/29-66 10:20 26133 00:10:06 10:03	697.197.60 697.197.60	69.24 EE	09. 24 · át	2 '016 09, 26 6t 0e: 22	1.016 69 Z5 8t 65:Z2	25.25 69.19.80 62.25 57.65 60.05 60.05
1 (m) 12 (m) 14				•		7 7774						21 3334 65 3351		1400 46		5 1 1 J 7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	7 JH			3 32		17 237	13 071			77 777F		(1) (1) (1)			96 3341			70 C T T T T T T T T T T T T T T T T T T	10 (1)

78 CLC6H5	1/90		(8.586	985 83	(2. BB	cu. 580	42.08	<0.588	98.2>	60.588 62.88	18.588	42.08	cu.588	42.88	68,588	88.77 88.78 8.78	<2.508 <2.88	< 8.588	89.5>	60.540	89.55	58. 58.8 53. 55.	99.77	000 C.	98. 47 88. H.S	42.08	69.586	99.75	<0.588	99.77	900 000	(0.589	<2.80	<0.580	90.57	0.11.	68.589	3.52	<2.98	65.5	<0.588	<2.80	<0.580	62.88	< 0.560	<2.00
18 1015E	1/90		C1.33	88. T	(1.80	(1.30	<1.88	1.36	00.15	3 50	(1.36 (1.36	41.00	ζ1.38	60.15	5. F	34.3	99.12	67.7	59.0	61.39	41.00	<1.38	99.15	7. 0. 7	() (S)	99.17	CL.30	60°1>	<1.30	80. C	07:12 (1:08	(1.30	(1.09	<1.30	99.17	65.53	3.7	89.1>	46.50	437		_	(1.30		_	<1.03
18	1 20		90.15		90 T	*				3 5						9.7						96. T			88 D				0p. [>			<1.00	0a. 15	61.0d	50.17	_	00.15			_			00115			41.00
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		DATE	99 91	9 70	18 06	13.86	17 86	92 39 50 39	96 36	90.00	39.56	33 56	33.86	90.56	33,86	35. 00 3. 3. 00 3. 00	25/86 25/86	32.86	32.86	98 66	98 86	3 7	90.4	9 4	2, 20	93 : 67	35 86	98 50	33 5 51	2 2 2	27.86	22 /86	22. 86	23,'86	2, 20	1	38768	92/62	19.06	19.86	24 ct	34 66	34 26.86	93.9	19, et	98 '51
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TASK 44 CC/MS CONFIRMATION DATA

FIELD GROUP NUMBER T44GM53 IS GC/MS RESULTS

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्राष्ट्रीय द्वाप्तर । स्थान		96518	37076	34010	167	65586	98554	17445	34501	14496	34546	32166	345.1	34506	32182
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1	STATE OF THE STATE	7 :	# 2 U k		₹.; † ;	41.35	, <del>1</del> , ₹, ₹, ₹, ₹, ₹, ₹, ₹, ₹, ₹, ₹, ₹, ₹, ₹,	ij.	GT.19	<1.28	<1.20	1.58	<0.618	<1.70	<2.40
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3		1	51 · · ·	3 ; 7 .	41.08	<1.00	02.30	<del></del>		65.55	<1.20	<1.00	<1.00	41.88	55.77
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)	(G.	* **		7 F	87.17 88	5 T	14.25	3 i	<b>e</b> . ∵	67.79	<1.20	27.6	619.65	97.15	<2.4n
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14 10 10 10 10 10 10 10 10 10 10 10 10 10	(F 48 48 48		\$ : J :	\$ ;	\$ ? •		8 ()	98.55 (5)		<2.00	<2.00	1.38	<1.00	41.00	<2.00
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	たか。 10 mm (10 mm) 10 mm (10	80 Z	5 50 9 00 7 7	3	97: TO		; t	30.00	91	97.17	87.17	3.46	(6.618	(1.78 (1.28)	62.40
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100 CO 100 PM	F	6	2 47	14.0	61.28		<2.1.	16.35	41.18	<1.20	56.7	34.5	6	01.70	\$ <del>\$ 7</del> 0
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77	1535 85. 86. 87. 13:51	6.219	<b>7</b> (1)	<1.21	7.84		(5.4)	48°S	<1.10	<1.28	14.9	3.99	565	47.15	C2.48

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	163	3002 05/05 83	(B. 138			(9.31		
	22	2063 05/06/87		<15	<4.0		<4.7	<2.0
144HM3	32	18/98/58	3.21			<9.31		
1446453	23	5916 95, 96:87		<15	<4.8		<4.7	<2.0
144.53	23	5616 65/86/87	<0.130	;	;	(9.31		
1440853	\$2.7	05, 12, 87		<b>&lt;15</b>	<3.8 :		<4.7	<1.1 - 1.1
141-03	27	35884 85712787 18:28 36984 85:12:97 18:38	02.1.07	9	G.8		<4· 1	
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100 84 4 4 4 4	
41.14 41.14 41.14 6.79 6.79 6.79 6.79 6.79	
CP US CP 4.0 C1.08 C14.0	a . <del>t</del>
1,4-9,174 UG-1, 10-1,00 UG-1,	
1,4-0x41 106/L 106/L 108/L	
US 10 10 10 10 10 10 10 10 10 10 10 10 10	1
25	
83. (C) 83. (C	
SB 011.0R.1N UC-1 VO - CG CG V - VG CG	
9, P = 0.05 E	
\$6 1500FIN UC L UC L (%) (%) (%) (%) (%) (%) (%) (%) (%) (%) (%) (%) (%) (%) (%) (%) (	
\$8 ALDFIN US L (4) 20 (4) 20 (4) 20 (4) 20 (4) 20 (4) 20 (4) 20 (6) 020 (6) 02	
\$8 UC.1 (C.1.09.3 (11.00.415 (11.00.415 (11.00.416 (11.00.41	
668 677 677 677 677 677 677 677 677 677	
FIGURE CORE.  MATERIA CORE.  144.47.2 2. 30.10 05 11 67 15.47  144.47.3 2. 30.10 05 11 67 15.47  144.47.3 2. 30.10 05 11 67 14.39  144.47.3 2. 30.10 05 11 67 14.39  144.47.3 4. 30.10 05 11 67 14.39  144.47.3 4. 30.10 05 11 67 14.39  144.47.3 4. 30.33 06 12 67 09.39  144.47.3 4. 37.44 07 06 97 09.39  144.47.3 4. 37.44 07 06 97 09.35  145.47.3 4. 37.44 07 06 97 09.35  145.47.3 4. 37.44 07 06 97 09.35	

COL4	C2.48 C1.58 C1.58 C1.58 C1.58 C2.48 C2.48 C2.48 C2.48 C3.48 C3.48 C3.48 C3.48 C4.58
301111 84 11100	(1,78) (1,09) (1,09) (1,09) (1,09) (1,09) (1,09) (1,09) (1,09)
12021 12021	2.61 41.86 26.4 20.6 2.16 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.2
1 98 610H3	91.6 25.4 4.28 4.28 4.28 4.38 61.38 61.46 2.76 16.7 13.5 7.60 41.00
1120CE 120CE 167L	(1.28 (1.28
1/9n 110CLE 87	(1.28 (2.08 (2.08 (2.08 (2.08 (2.08 (1.28 (2.08 (1.28 (2.08
7: Jii 30011	<ul><li>&lt;1.10</li><li>&lt;1.10</li><li>&lt;1.10</li><li>&lt;1.10</li><li>&lt;1.10</li></ul>
A CHALCE BY BY	65.08 6.180
1 9n 1 (4-88) 88	60000000000000000000000000000000000000
Tron Tra-H BH	0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.35
7/90 2N3871H13 8M	(1.28 (1.28 (1.28 (1.28 (1.28 (1.28 (1.28 (1.28 (1.28 (1.28 (1.28 (1.28 (1.28 (1.28 (1.28 (1.28 (1.28 (1.28 (1.28
1.9a 101 168 8m	(1.21) (1.20) (1.20) (1.21) (1
7, 90 BENZENE BENZENE	(1.34 (1.18 (1.18 (1.18 (1.18 (1.18 (1.18 (1.18 (1.34
RB MIBN UGAL	(12.9 (2.10) (2.
PE:  K:  SAMPLE ID DATE	144, kg   92   84110 05 11 87 15, 42   144, kg   92   84110 05 11 87 14, 39   144, kg   93   144, kg   93   144, kg   93   94   143, kg   94   94   94   94   94   94   94   9

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DCPD	111:71	3			5	;	7.50	57.0			;		, ,			<4.7
DCPD	1167.1	1	£ 63	16.6	16.87	10.0		37.4	0.7	16.07	15.65	. 6 07	(3, 3)		16 07	15:43
DBCP	1/20			a C	9.5	7.3.0	0.00	0.57	8	9.5	0 67	0.7,	12	9 6	0.7	(3.8
DBCP	7/30			C15	?	317	517	;	\$17	;	513	;	512	313	;	<15
OBCP	1, 90		<0.130		CB, 139			0 176	•	< 6.136		<8.138			CB. 130	
		CAMPLE 1D DATE TIME	36118 35 11:87		36139 05 11.3 14:39	36139 05 11 87 14:39			37332 07:08.47 06:05	37332 86/18,87 88:29	18/68:10	96 18:87	97.88.87	03:48:83	06.17783	67 08/87
;;		*	3	4.7	6	Ž	7	7	45	6	43	=	7	7	33	<del>9</del>
PARAMETER:	: S : N:	FLD. GRP.	1440 M	144685	144CH 3	144685	1446MS3	1440P3	144683	1440P3	144683	144C+P3	1440MSS	TAGES	1440P3	T446MS3

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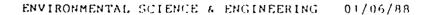
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TASK 4

ANALYTICAL RESULTS FOR NONTARGET COMPOUNDS IDENTIFIED BY GC/MS ANALYSIS



## RESULTS FOR NON-TARGET COMPOUNDS AT STATION

JE SAMPLE \* SEQUENCE NUMBER: T44GMS3

ILLECTION DATE:

07/08/87

LLECTION TIME:

08:56

.SATHAM	A TEST NAME	ESE STORET	CONC.	IDENTIFICATION
'K563	UG/L	91563	21.9	UNKNOWN, ALICYCLIC CMPD.
'K566	UG/L	0 91566 0	72.7	UNKNOWN, ALICYCLIC CMPD.
K569	UG/L	91569	18.1	UNKNOWN
°K573	UG/L	91573 0	9.11	UNKNOWN, ALICYCLIC CMPD.
K577	UG/L	91577 0	13.3	пикиоми
K582	UG/L	91582 0	16.9	пикиоми
K587	UG/L	91587 0	16.5	пикиоми
K589	UG/L	91589 0	28.2	пикиоми
K595	UG/L	91595 0	13.7	UNKNOWN
K625	UG/L	91625	13.8	пикиоми
KS7S KS79	UG/L	91575	16.1	пикиоми
K580	UG/L	91579 0 91580	79.0 20	UNKNOWN
K581	UG/L	0 91581	10.4	пикиоми
K583	UG/L	91583	30.0	пикиоми
K585	UG/L	0	80	UNKNOWN, ALICYCLIC CMPD.
K586	UG/L	0 91586	54.4	UNKNOWN
K593	UG/L	0 91593	24.5	UNKNOWN
K594	UG/L	0 91594	31.5	UNKNOWN
K623	UG/L	0 91623	7.90	c12h9c15o
	UG/L	0		2,5,7-METHENO-3H-CYCLOPENTA- [A]PENTALEN-3-ONE
K633	UG/L	91633 0	40.4	PENTACHLORO CMPD, POSS.M.WT.360
K519		01210	23.1	TETRACHLOROETHENE

116/1 91543 0 UNKSA3 11.2 DCPD ISOMER UG/L

# RESULTS FOR NON-TARGET COMPOUNDS AT STATION 37332

ESE SAMPLE \* SEQUENCE NUMBER T44GMS3

4.2

COLLECTION DATE: COLLECTION TIME:

07/08/87

08:05

UASATHAMA	TEST NAME	ESE STORET	CONC.	IDENTIFICATION
UNK523	UG/L	91523	8.80	CHLOROBENZENE
UNK582	UG/L	91582	10.3	UNKNOWN .

RESULTS FOR NON-TARGET COMPOUNDS AT STATION 37333

ESE SAMPLE . SEQUENCE NUMBER: T44GMS3

43

COLLECTION DATE:

07/09/87

COLLECTION TIME:

07:20

UASATHAMA TEST NAME ESE STORET CONC. IDENTIFICATION
UNK642 91642 37.8 UNKNOWN
UG/L 0

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## RESULTS FOR NON-TARGET COMPOUNDS AT STATION 37344

ESE SAMPLE \* SEQUENCE NUMBER: T44GMS3

44

COLLECTION DATE: COLLECTION TIME:

07/08/87

11:15

UASATHAMA	TEST NAME	ESE STORET	CONC.	IDENTIFICATION
UNK523		91523	2.90	CHLOROBENZENE
	UG/L	0		
UNK 582	•	91582	8.12	UNKNOWN
	UG/L	0		
UNK589		91589	79.2	UNKNOWN
	UG/L	0		
UNK 585		91585	7	UNKNOWN
	UG/L	0		
UNK 5 9 3		91593	13.7	UNKNOWN
	UG/L	O		
UNK 5 1 9		91519	39.5	TETRACHLOROETHENE
	UG/L	0		

RESULTS FOR NON-TARGET COMPOUNDS AT STATION 37359

ESE SAMPLE . SEQUENCE NUMBER: T44GMS3

45

COLLECTION DATE: COLLECTION TIME:

07/08/87

09:45

UASATHAMA	TEST NAME	ESE STORET	CONC.	IDENTIFICATION
UNK523	UG/L	91523	5.50	CHLOROBENZENE
UNK543	UG/L	91543	2.48	DICHLOROBENZENE

TASK 44

ANALYTICAL RESULTS FOR NONTARGET COMPOUNDS IDENTIFIED BY GC/MS ANALYSIS

DATE 08/26/86 TIME 14:56 UNK563 91563 28.8 UNK UNK565 91565 154 CAPROLACTAM UNK582 91582 20.4 UNK	PARAMETERS UNITS	STORET #	37305 OPG3C	ID
TIME 14:56 UNK563 91563 28.8 UNK UNK565 91565 154 CAPROLACTAM UNK582 91582 20.4 UNK		METHOD	108/26/96	
UNK563 91563 28.8 UNK UNK565 91565 154 CAPROLACTAM UNK582 91582 20.4 UNK				
UNK582 91582 20.4 UNK	· -	91563		UNK
UNK 506 91362 20.4 UNK	• =	· <del>-</del>		CAPROLACTAM
91586 8.78 UNK	UNK586	91582 91586	20.4 8.78	

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PARAMETERS	STORET #	37307 OPGW2C	ID
UNITS	METHOD	2	
DATE		06/18/86	
TIME		11:41	•
UNK594	91594	26.4	N-HEPTADECANE; 2,10,6,4-TETR; METHYLPENTADECANE
UNK600	91600	7.48	N-OCTADECANE
UNK605	91605	13.0	N-NONADECANE
UNK610	91610	7.40	N-EICOSANE

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				*
		37308		
PARAMETERS	STORET #	OPGW2C	ID	
UNITS	METHOD	3		<b>3</b> 2
DATE		06/16/86		•
TIME		15:17		•
UNK519	91519	20.9	TETRACHLOROETHENE	4
UNK563	91563	7.43	CYCLOPENTADIENE DERIVATIVE C111	•
UNK566	91566	18.9	c10h10o, CYCLPENTADIENE	•
UNK579	91579	33.6	UNK	
UNK582	91582	6.61	UNK	•
UNK583	91583	7.54	UNK	
UNK585	91585	27.9	UNK	
UNK586	91586	18.7	UNK	
UNK589	91589	30.5	UNK	
UNK593	91593	14.4	UNK	
UNK594	91594	6.78	UNK	•
UNK595	91595	6.42	UNK	
UNK633	91633	8.52	TETRACHLORINATED COMPOUND	

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PARAMETERS		STORET #	37312 OPGW2C	ID
	UNITS	METHOD	1	
DATE			06/17/86	
TIME			11:13	
UNK579		91579	6.57	UNK

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		37313		
PARAMETERS	STORET #	OPG3C	ID	
UNITS	METHOD	2		
DATE		08/26/86		
TIME		10:15		
UNK560	91560	7.49	UNK	
UNK563	91563	29.0	UNK	
UNK565	91565	339	CAPROLACTAM	
UNK579	91579	14.4	2-(4-METHYL-2-FURYL)-2-	1
			CYCLOPENTEN-1-ONE	•
UNK582	91582	27.5	UNK	
UNK585	91585	11.8	UNK	
UNK586	91586	14.6	UNK	
UNK588	91588	38.7	PROPANOIC ACID, 2-METHYL-1-	
			(1,1-DIMETHYL ETHYL)-2-METH.L	
			-1,3-PROPANEDIEL ESTER	1
UNK599	91599	7.87	UNK	
UNK642	91642	96.6	UNK	
UNK654	91654	911	UNK	
UNK671	91671	752	UNK	
UNK693	91693	571	UNK	_
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PARAMETERS UNITS	STORET #	37320 OPG3C	ID
DATE TIME UNK529 UNK648 UNK652	91529 91648 91652	09/22/86 12:06 14.1 11.3 236	2-METHYLCYCLOPENTANONE UNK UNK

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PARAMETE	RS	STORET #	37332 OPGW2C	ID
	UNITS	METHOD	5	10
DATE			06/16/86	
TIME			11:58	
UNK040		91040	7.50	UNK
UNK582		91582	6.41	UNK

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PARAMETE	RS	STORET #	37343 OPG//2C	ID
DATE	UNITS	METHOD	6 06/13/86	10
TIME UNK594		91594	08:39	N-HEPTADECANE, 2,6,10,14- TETRAMETHYLPENTADECANE

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ARAMETERS UNITS	STORET #	37343 OPGW2C 6	ID
ATE IME	· · · · · · · · · · · · · · · · · · ·	06/13/86 08:39	
NK600	91600	5.51	2,6,10,14-TETRAMETHYLPENTADECAN
NK605	91605	7.49	N-NONADECANE
NK667	91667	175	UNK

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PARAMETERS UNITS DATE TIME	STORET # METHOD	37347 OPG3C 5 08/25/86 00:00	ID	=

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			3/349	
PARAMET	CERS	STORET #	OPG3C	ID
	UNITS	METHOD	6	
DATE			09/11/86	
TIME			07:53	

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		37353	ID	
PARAMETERS	STORET #	OPGW2C		
UNITS	METHOD	8		
DATE		06/12/86		,
TIME		11:32		
UNK523	91523	10.8	A NONANE	
UNK524	91524	13.0	4-HYDROXYL-4-METHYL-2-PENTANC	Ε
UNK526	91526	20.9	A NONANE	
UNK526	91526	20.9	A NONANE	
UNK527	91527	32.3	METHYLOCTANE	•

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			37353	
PARAMETE:	RS	STORET #	OPGW2C	ID
	UNITS	METHOD	8	
DATE			06/12/86	
TIME			11:32	
UNK649		91649	120	UNK
UNK657		91657	67.7	UNK

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**37353** OPG3C PARAMETERS STORET # METHOD ID UNITS DATE TIME 09/12/86 07:38

PARAMETERS DATE TIME UNK635	S UNITS	STORET # METHOD	37354 OPGW2C 4	ID	
		91635	06/11/86 10:06 2.83	BIS(2-ETHYLHEXYL)PHTHALATE	

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			37356		,	·
DATE TIME	UNITS		OPG3C 7 09/08/86 10:43	ID	ID	<b>3</b> 5, 1 − 1 − 1 − 1 − 1 − 1 − 1 − 1 − 1 − 1
UNK652		91652	127	UNK		•

PARAMETERS STORET # OPG3C ID

UNITS METHOD 8

DATE 09/11/86
TIME 10:47

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PARAMETERS UNITS DATE TIME	STORET # METHOD	BOLLER OPGW2C 7 07/01/86 09:32	ID	
UNK588	91588	11.4	UNK	
UNK635	91635	18.4	PHTHALATE, PHTHALATE	BIS(2-ETHYLKEXYL)-
UNK640	91640	5.79	PHTHALATE	
UNK649	91649	7.08	PHTHALATE	
UNK654	91654	6.42	PHTHALATE	
UNK656	91656	112	UNK	
UNK669	91669	5.87	PHTHALATE	

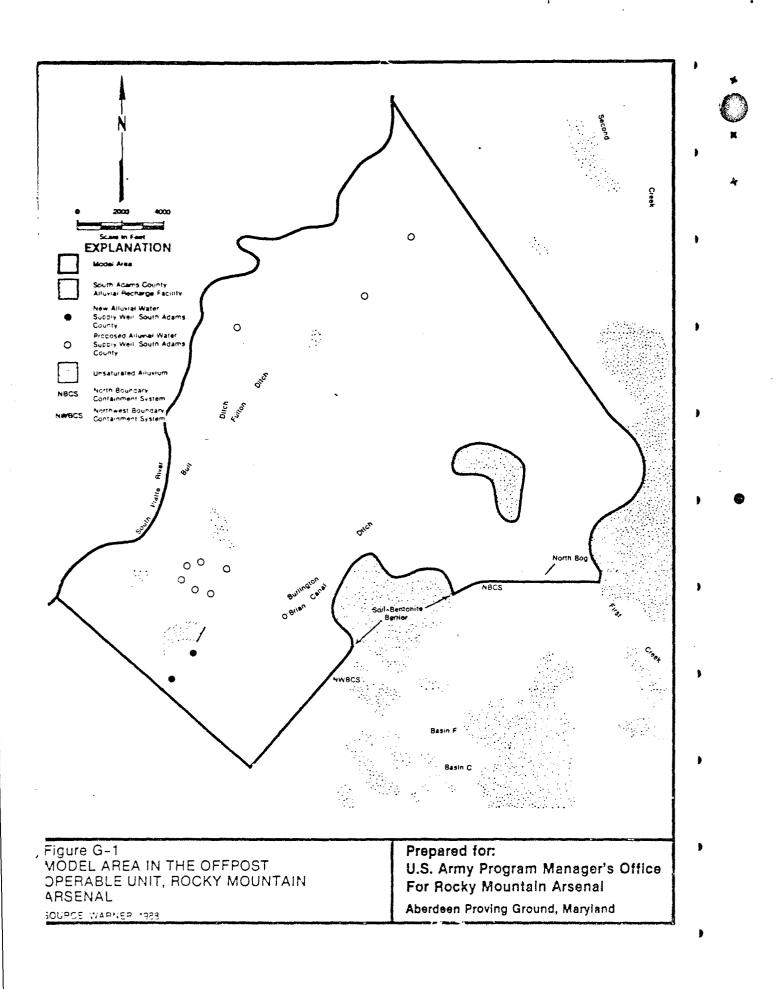
-

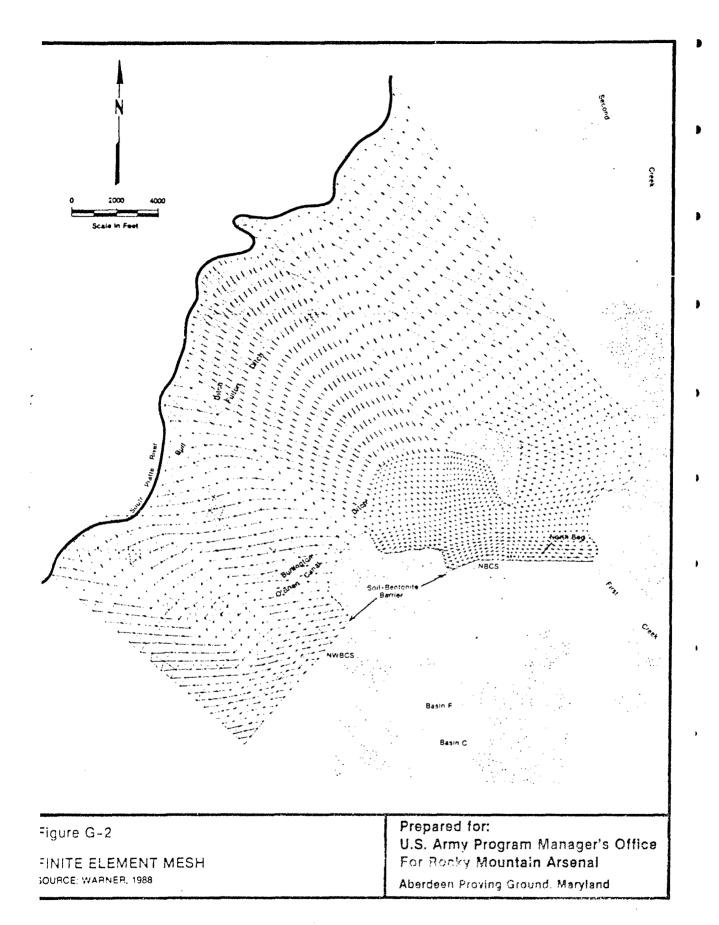
APPENDIX G
CONTAMINANT TRANSPORT MODEL RESULTS

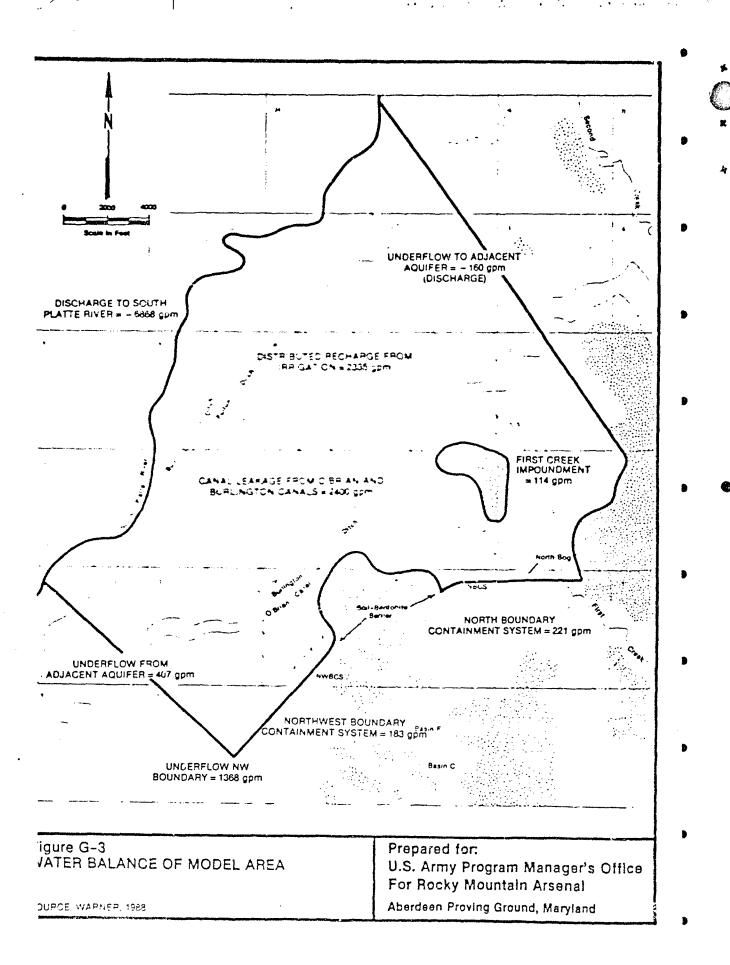
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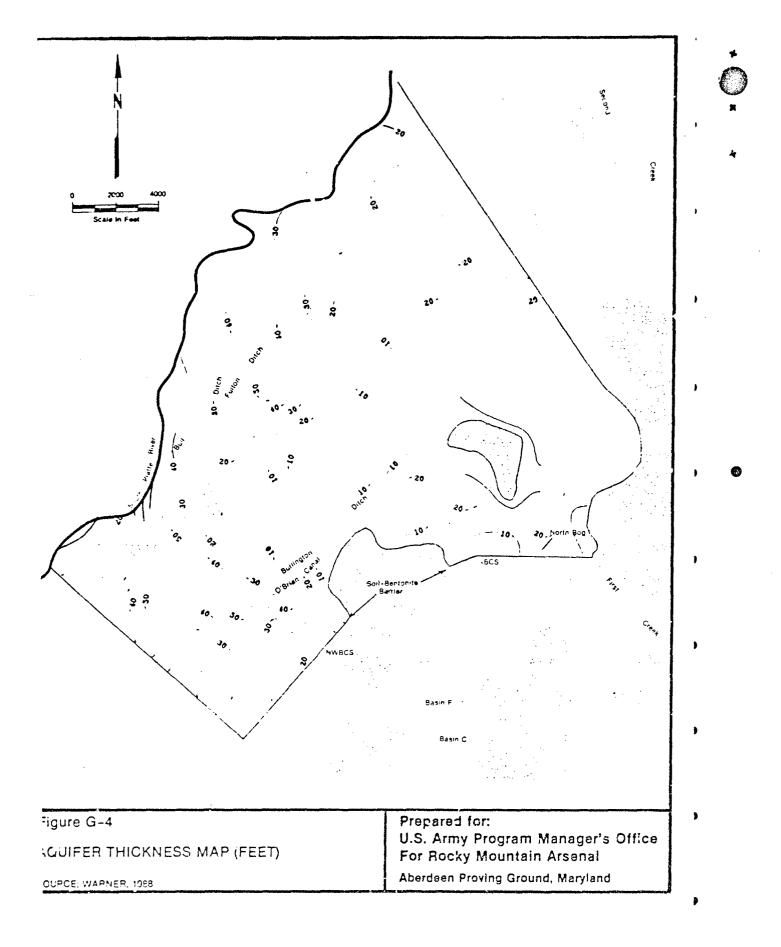
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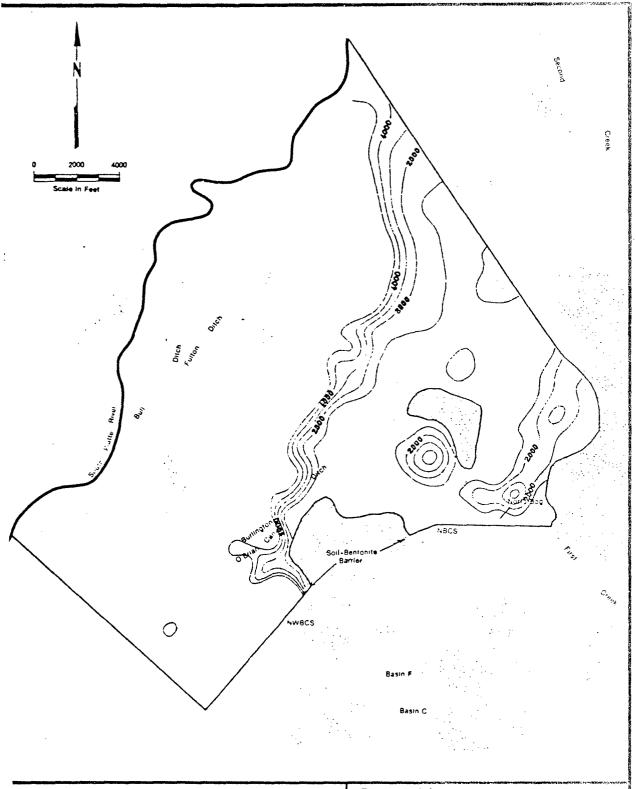
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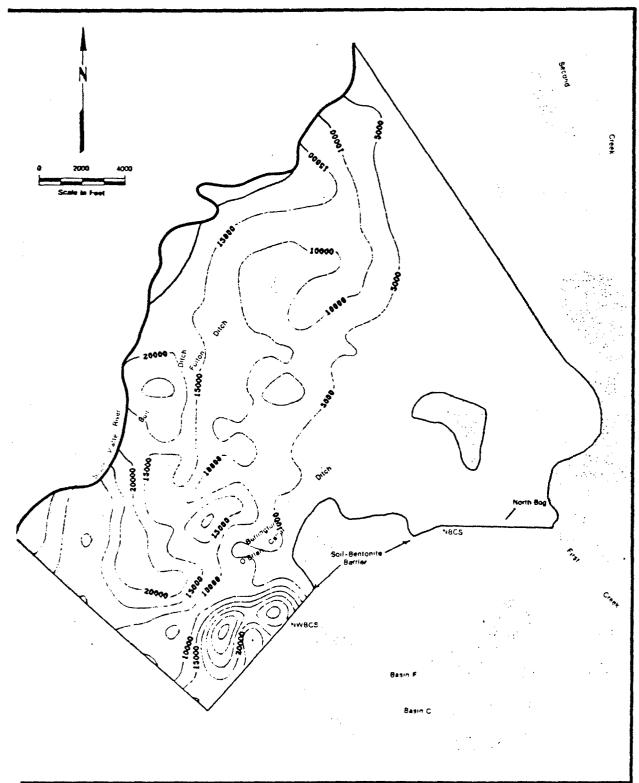




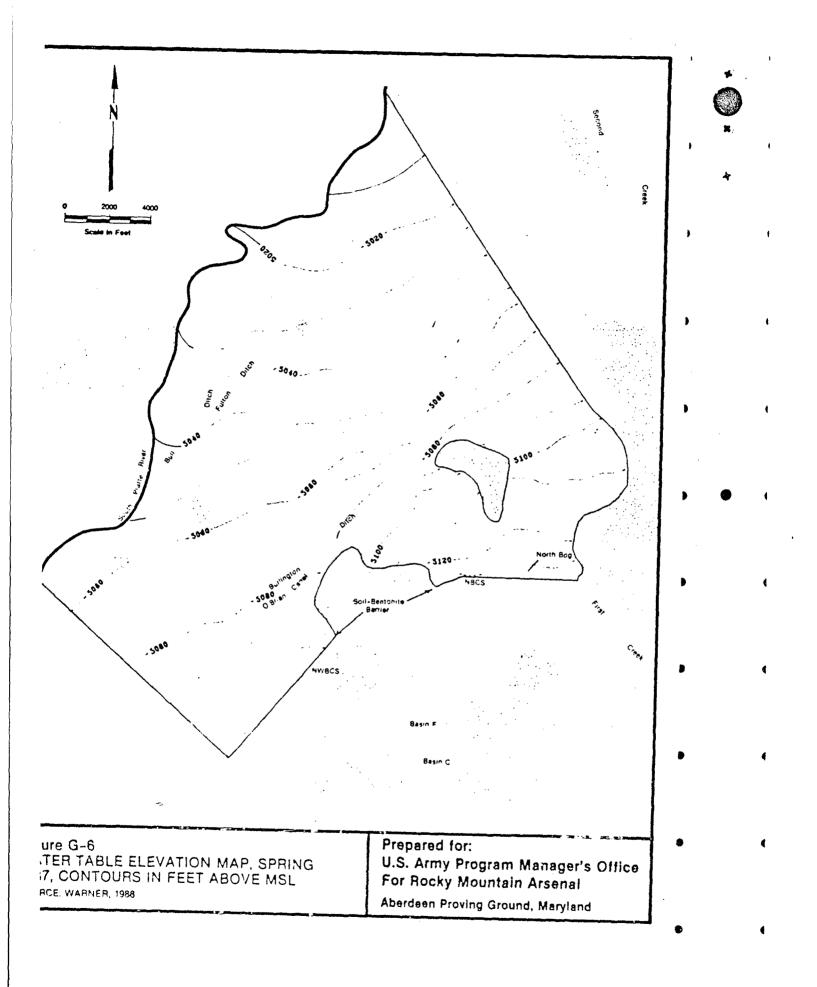


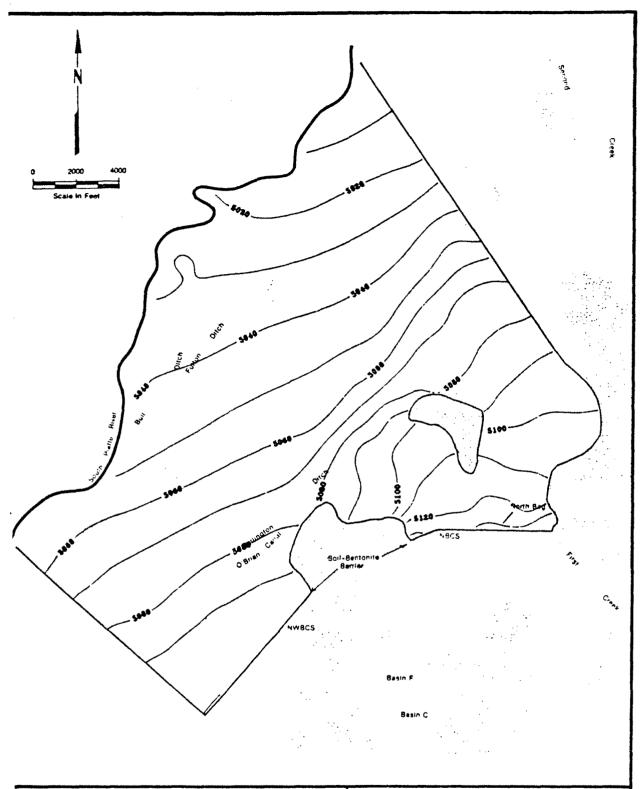


Jure G-5a IANSMISSIVITY MAP, DNTOUR INTERVAL (1,000-5,000 ft²/day) JRCE: WARNER, 1988

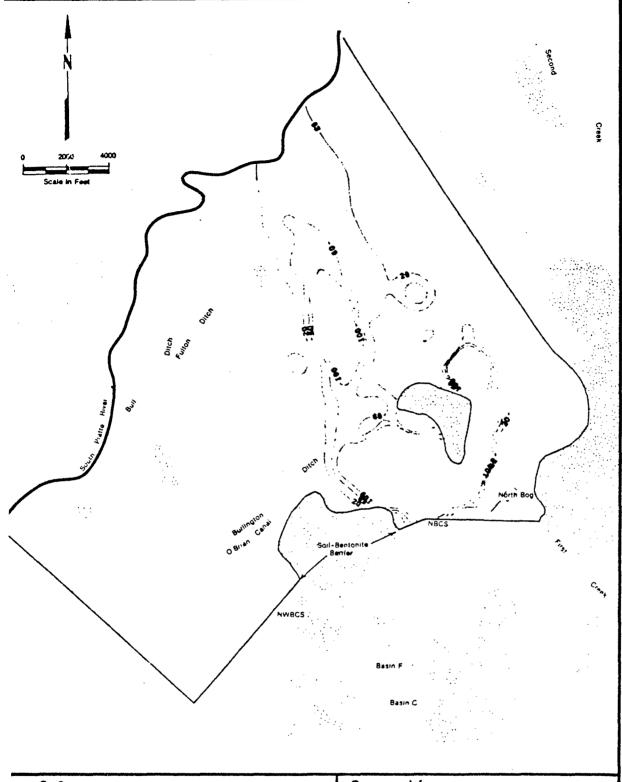


TUTE G-5b
ANSMISSIVITY MAP,
NTOUR INTERVAL (5,000-25,000 ft²/day)
RCE: WARNER, 1988

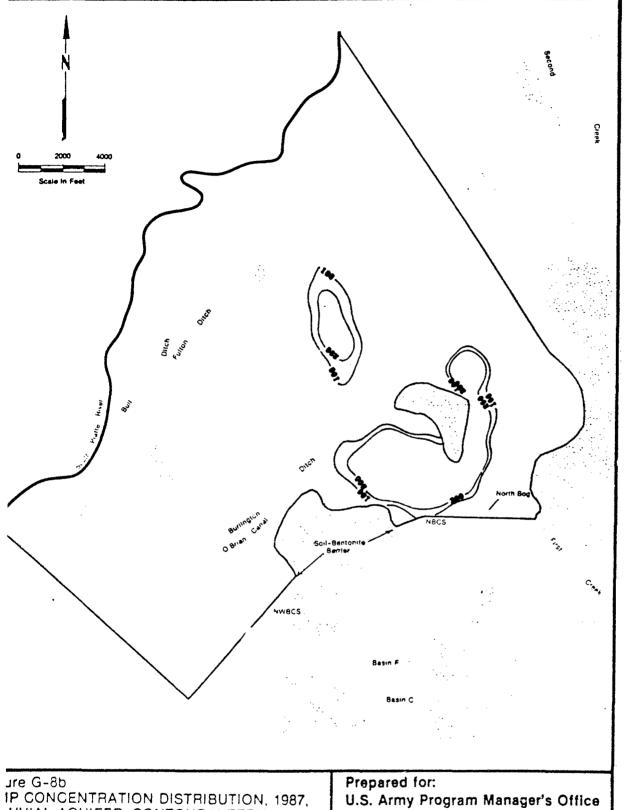




JURE G-7
DDEL CALCULATED STEADY STATE,
ATER TABLE ELEVATION MAP, CONTOURS
FEET ABOVE MSL
IRCE WARNER, 1988



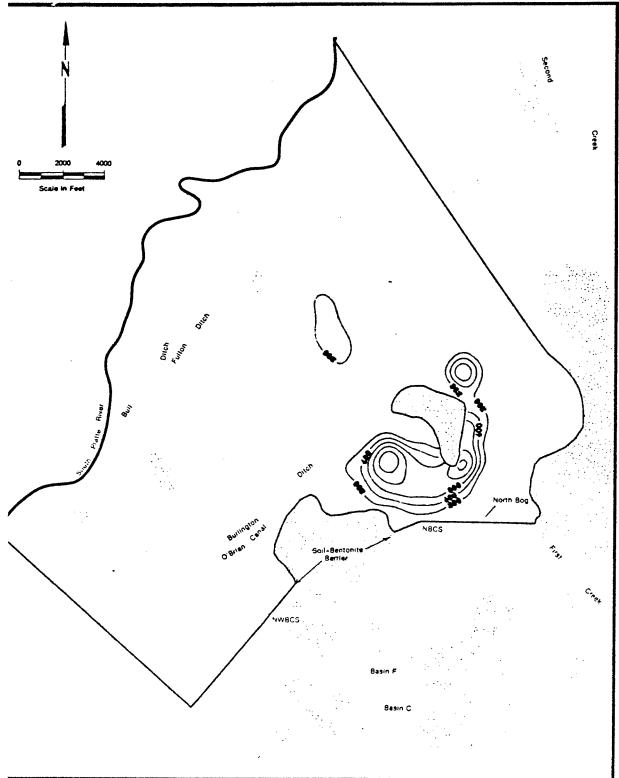
ure G-8a
1P CONCENTRATION DISTRIBUTION, 1987,
\_UVIAL AQUIFER, CONTOUR INTERVAL
-100 ug/l)
3CE: WARNER, 1988



Jre G-8b
IP CONCENTRATION DISTRIBUTION, 1987,
.UVIAL AQUIFER, CONTOUR INTERVAL I-200 ug/l)

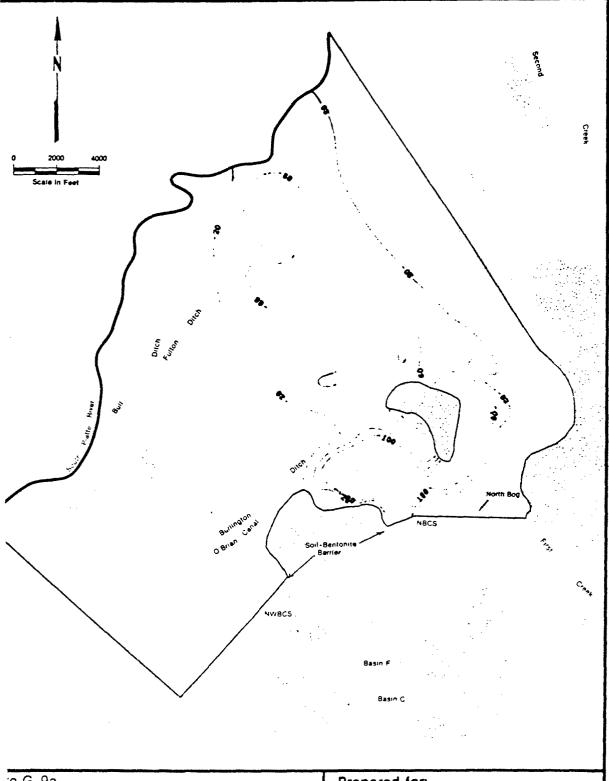
ICE. WARNER, 1988

For Rocky Mountain Arsenal Aberdeen Proving Ground, Maryland

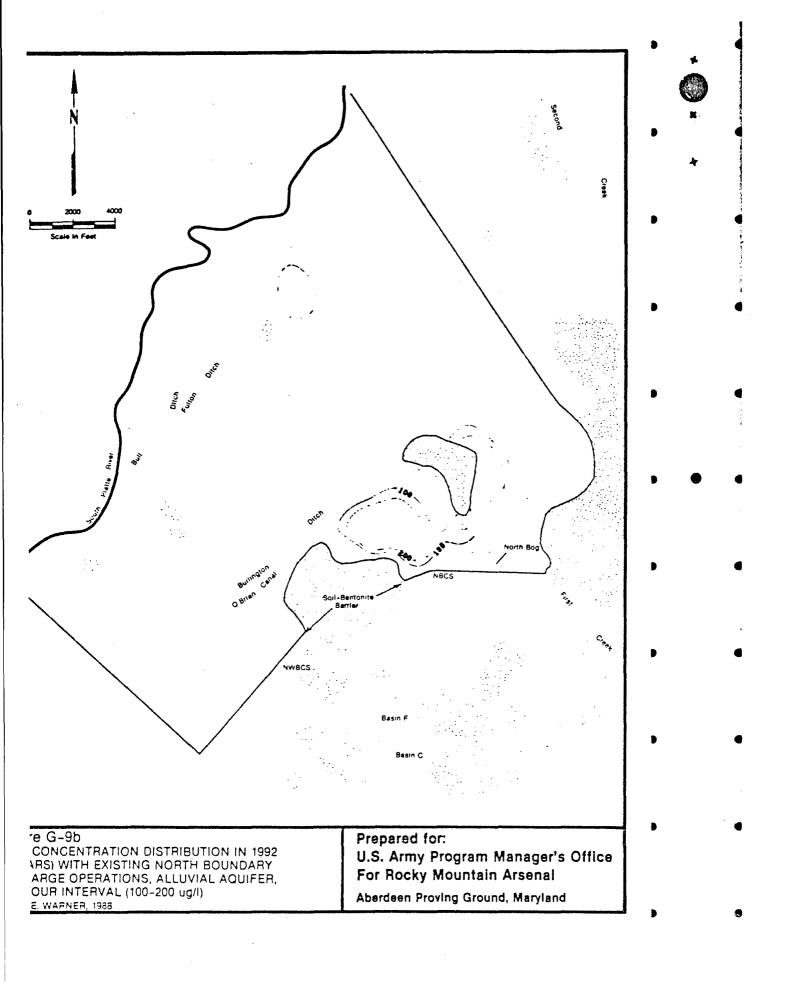


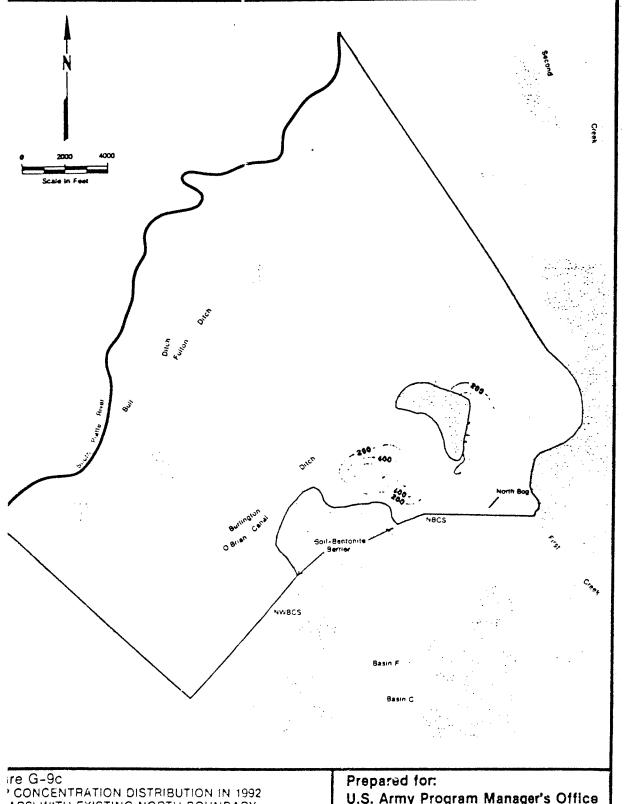
ure G-8c 1P CONCENTRATION DISTRIBUTION, 1987, .UVIAL AQUIFER, CONTOUR INTERVAL )-1000 ug/l)

ICE: WARNER, 1988

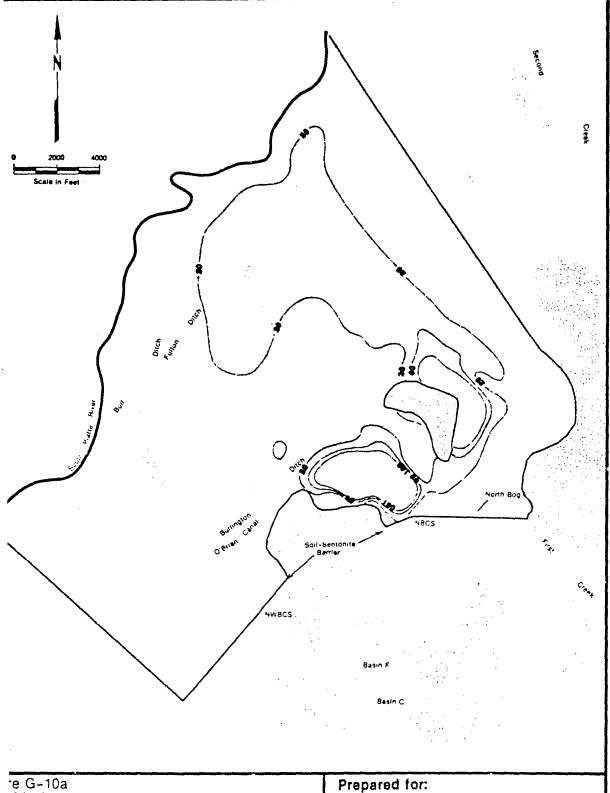


e G-9a CONCENTRATION DISTRIBUTION IN 1992 (RS) WITH EXISTING NORTH BOUNDARY ARGE OPERATIONS. ALLUVIAL AQUIFER, OUR INTERVAL (20-100 ug/l) E: WARNER, 1988

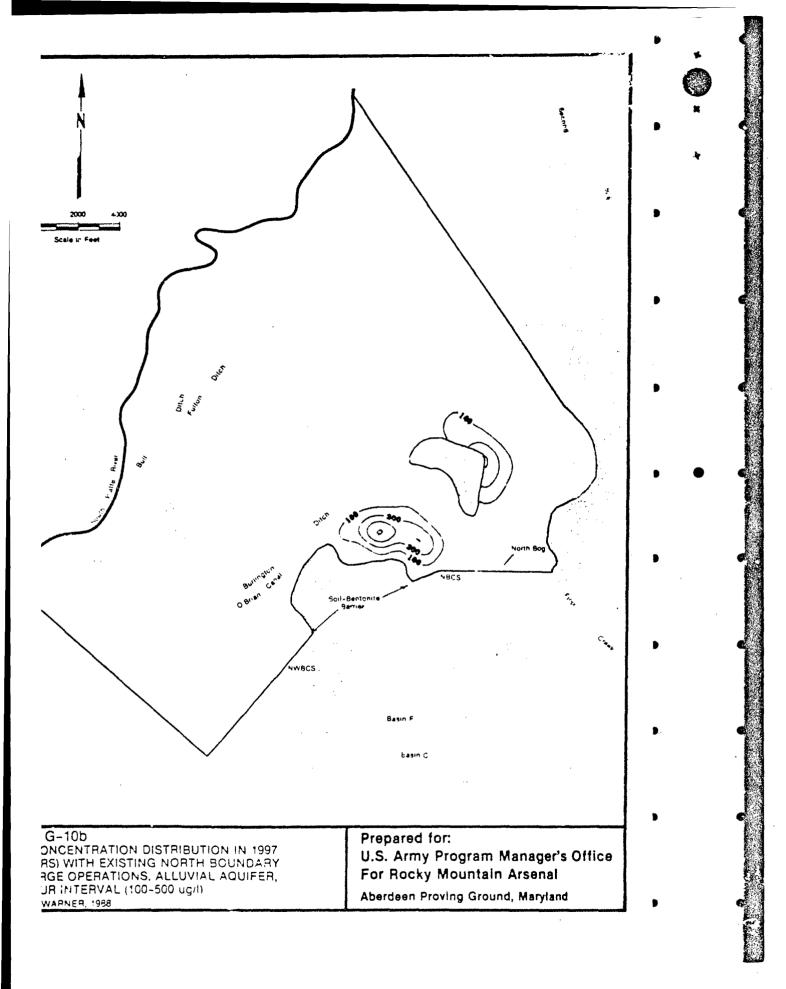


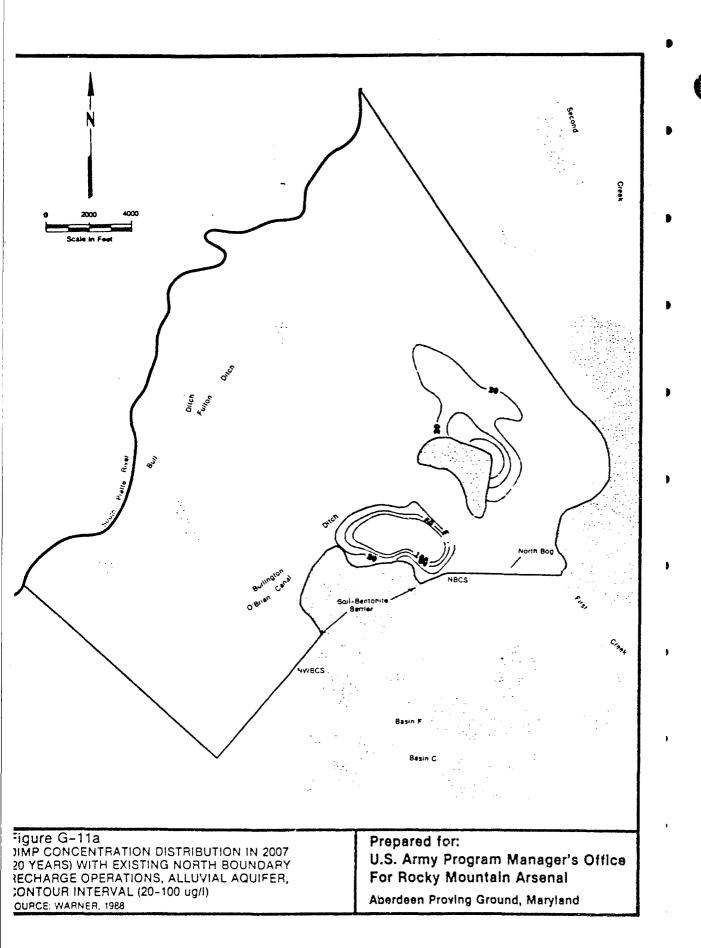


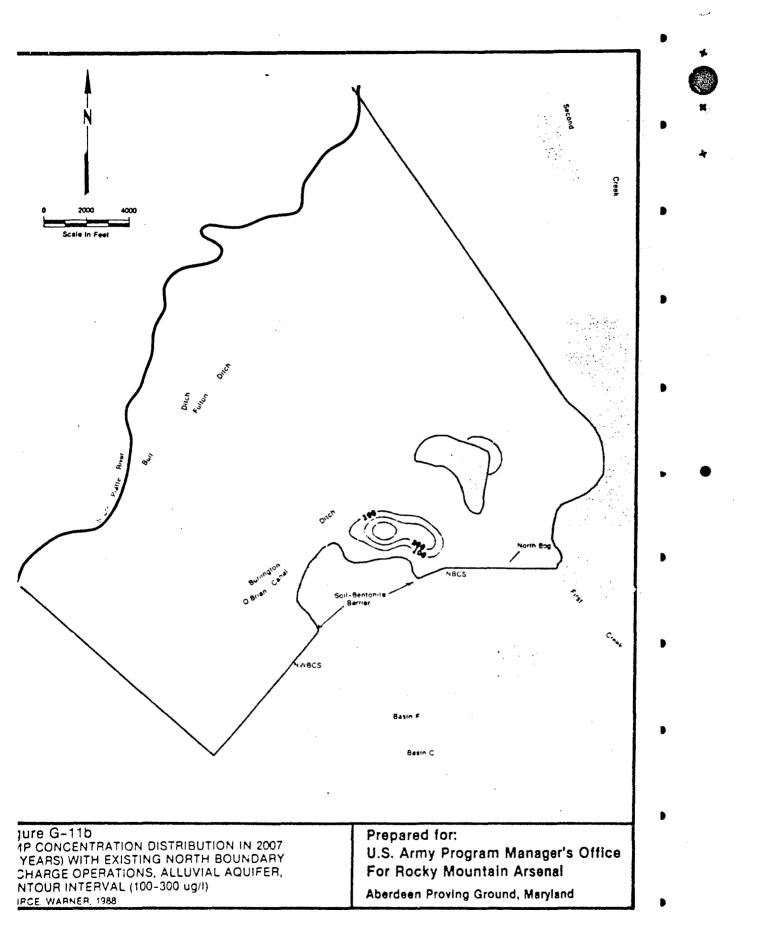
Ire G-9c
CONCENTRATION DISTRIBUTION IN 1992
ARS) WITH EXISTING NORTH BOUNDARY
HARGE OPERATIONS, ALLUVIAL AQUIFER,
TOUR INTERVAL (200-800 ug/I)
SE WARNER, 1988

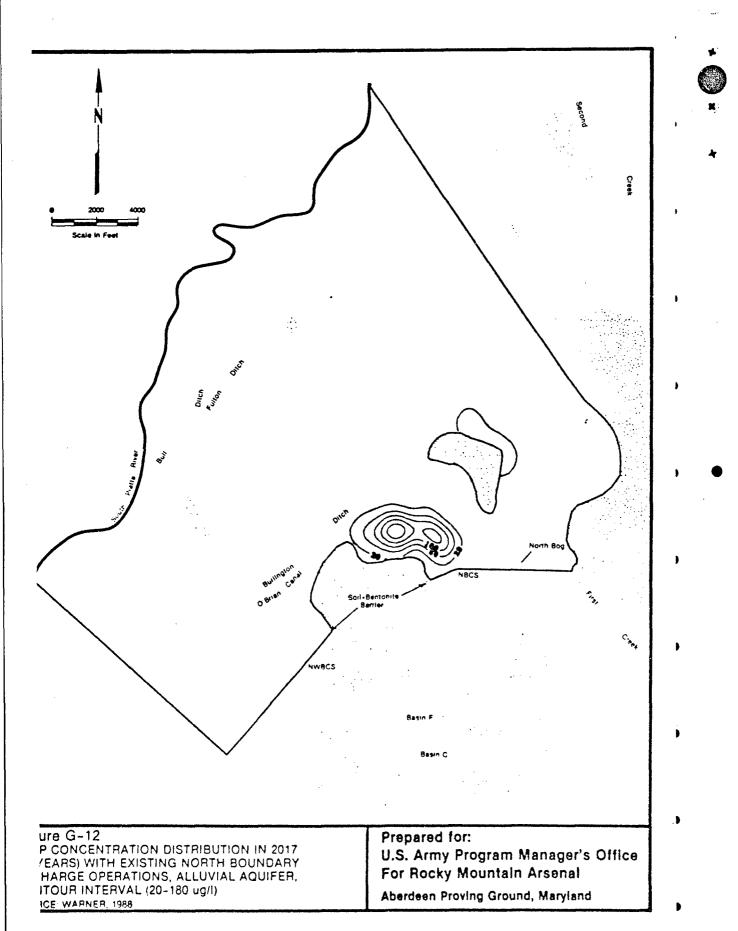


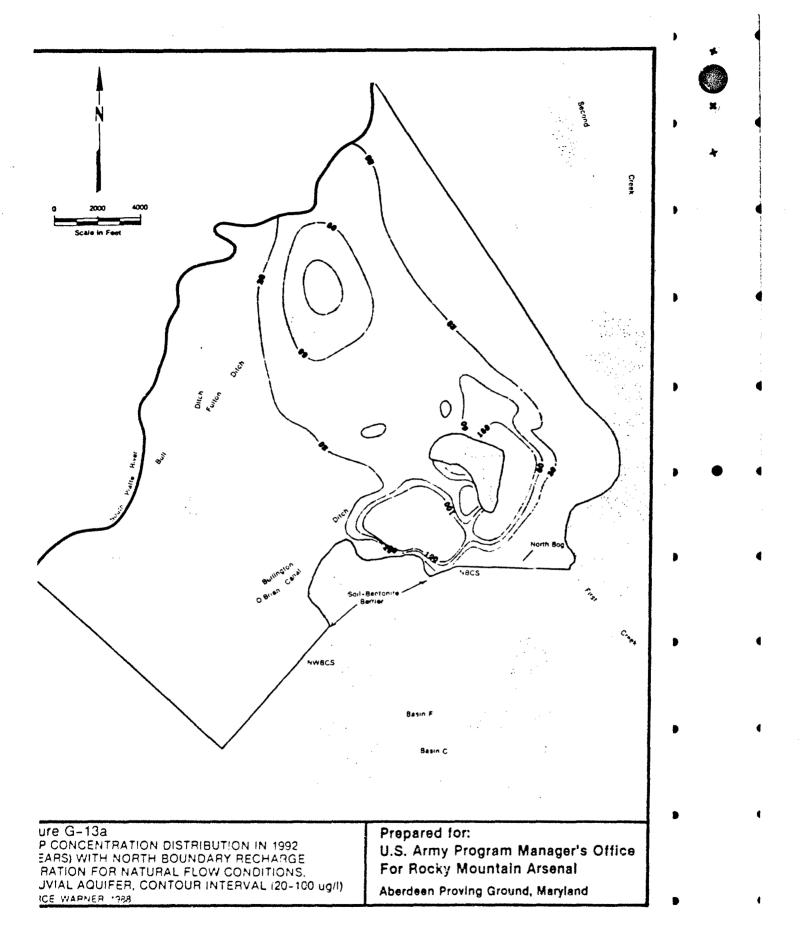
TE G-10a
CONCENTRATION DISTRIBUTION IN 1997
EARS) WITH EXISTING NORTH BOUNDARY
ARGE OPERATIONS, ALLUVIAL AQUIFER,
OUR INTERVAL (20-100 ug/l)
E WARNER, 1988

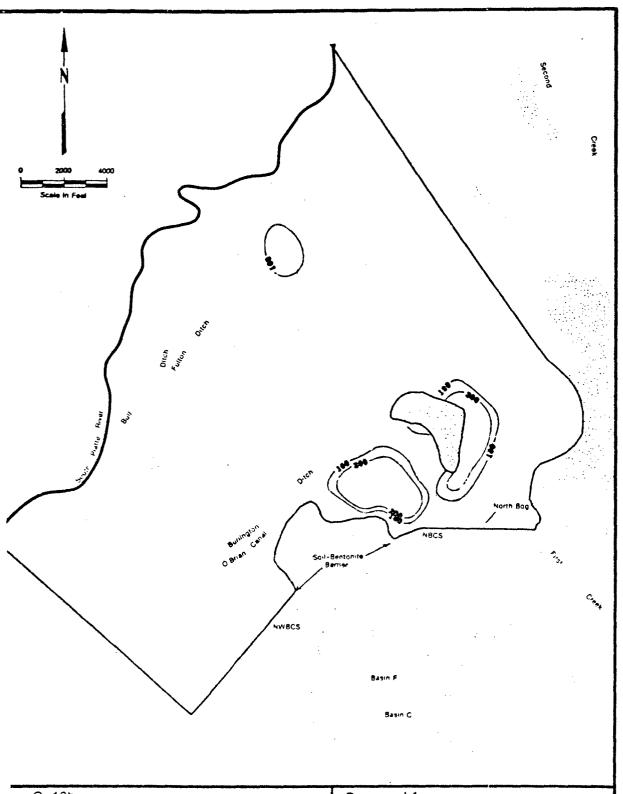






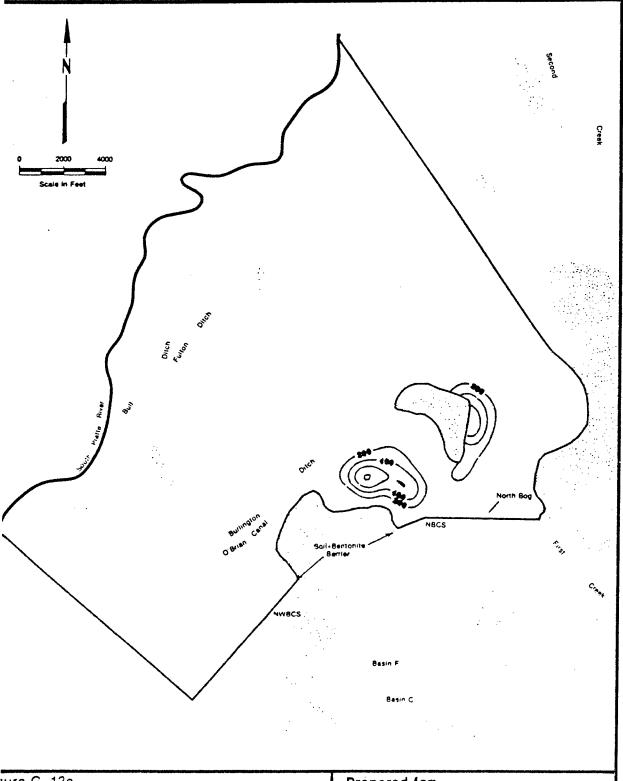






Ire G-13b

CONCENTRATION DISTRIBUTION IN 1992
EARS) WITH NORTH BOUNDARY RECHARGE
RATION FOR NATURAL FLOW CONDITIONS,
JVIAL AQUIFER, CONTOUR INTERVAL (100-200 ug/l)
SE: WARNER, 1988



JUTE G-13c

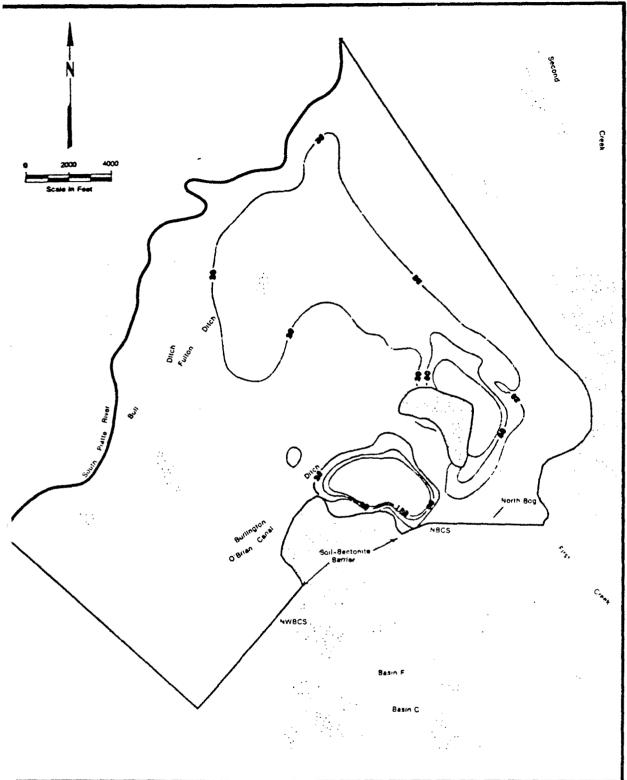
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YEARS) WITH NORTH BOUNDARY RECHARGE

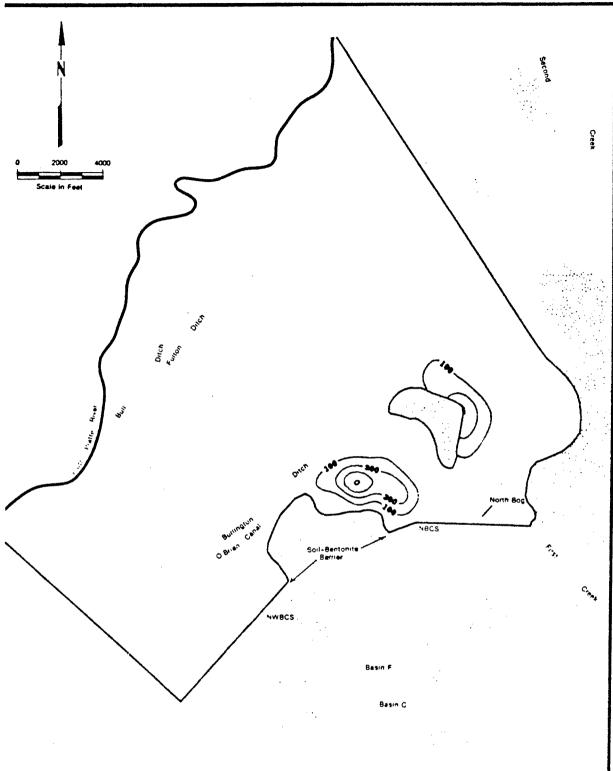
ERATION FOR NATURAL FLOW CONDITIONS,

LUVIAL AQUIFER, CONTOUR INTERVAL (200-800 ug/l)

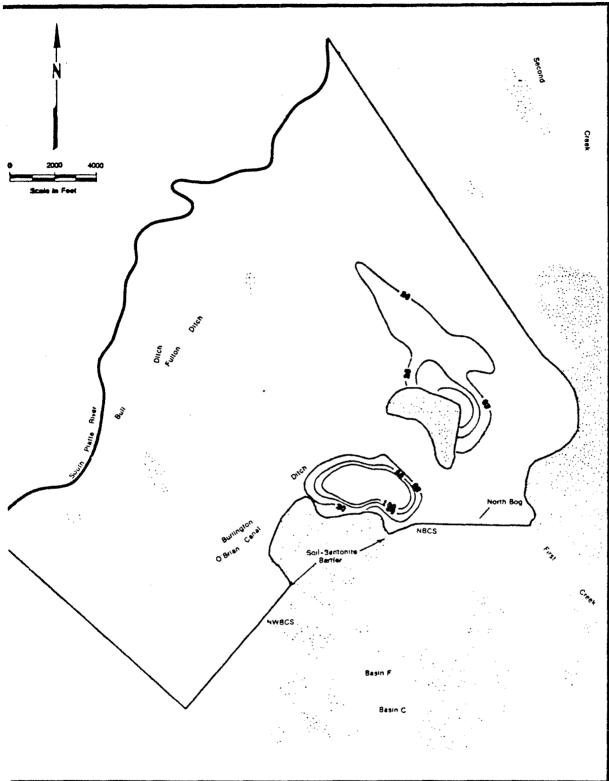
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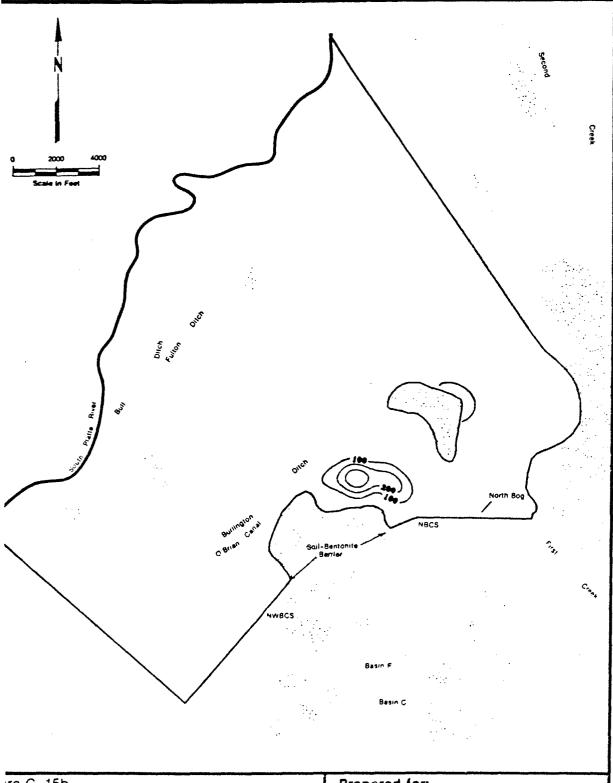
Jre G-14a
CONCENTRATION DISTRIBUTION IN 1997
EARS) WITH NORTH BOUNDARY RECHARGE
RATION FOR NATURAL FLOW CONDITIONS,
JVIAL AQUIFER, CONTOUR INTERVAL (20-100 ug/l)
CE: WARNER, 1988



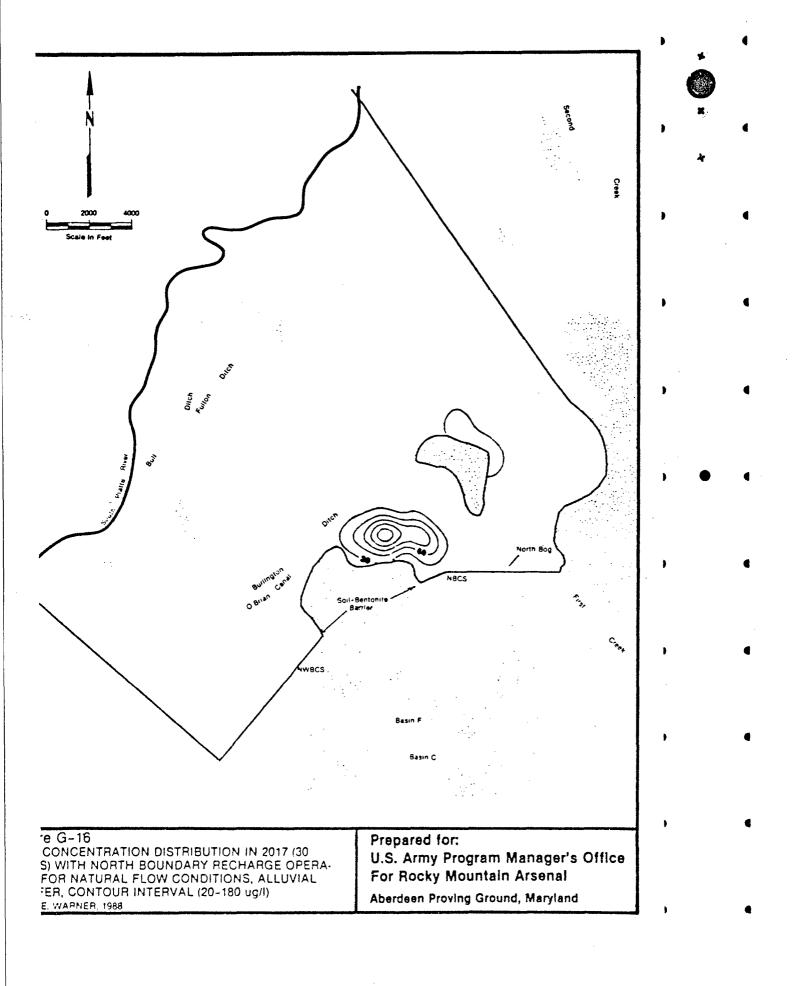
IRE G-14b
CONCENTRATION DISTRIBUTION IN 1997
EARS) WITH NORTH BOUNDARY RECHARGE
RATION FOR NATURAL FLOW CONDITIONS,
IVIAL AQUIFER, CONTOUR INTERVAL (100-700 ug/l)
CE. WARNER, 1988

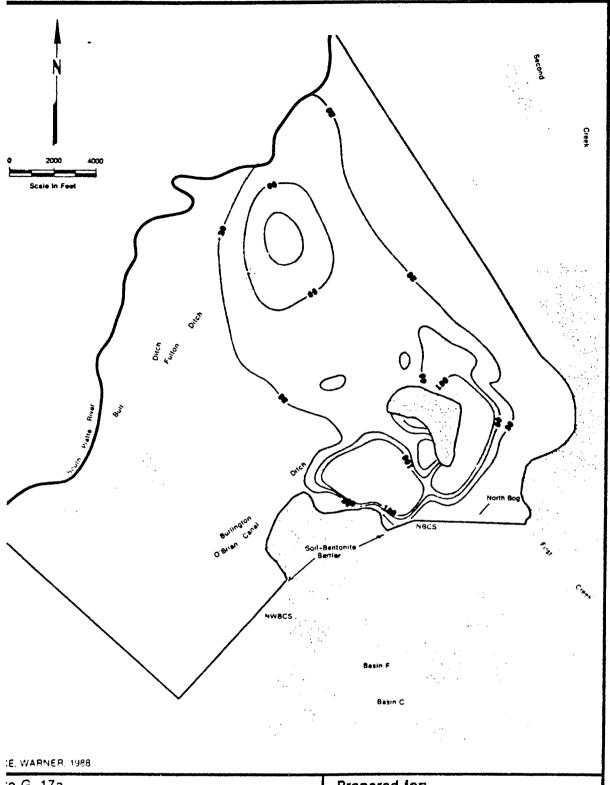


Te G-15a
CONCENTRATION DISTRIBUTION IN 2007
(ARS) WITH NORTH BOUNDARY RECHARGE
ATION FOR NATURAL FLOW CONDITIONS,
//AL AQUIFER, CONTOUR INTERVAL (20-100 ug/l)
E: WARNER, 1988

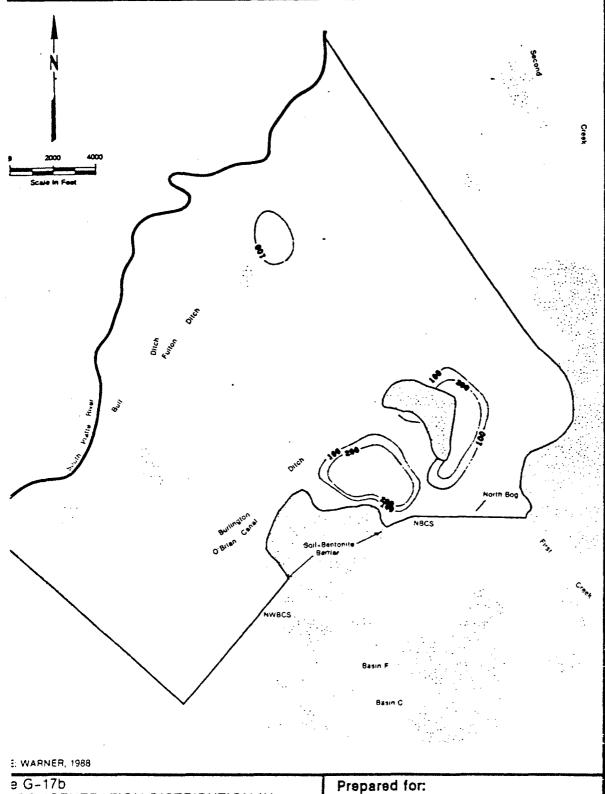


Ire G-15b
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EARS) WITH NORTH BOUNDARY RECHARGE
SATION FOR NATURAL FLOW CONDITIONS,
VIAL AQUIFER, CONTOUR INTERVAL (100-300 ug/l)
CE: WARNER, 1988

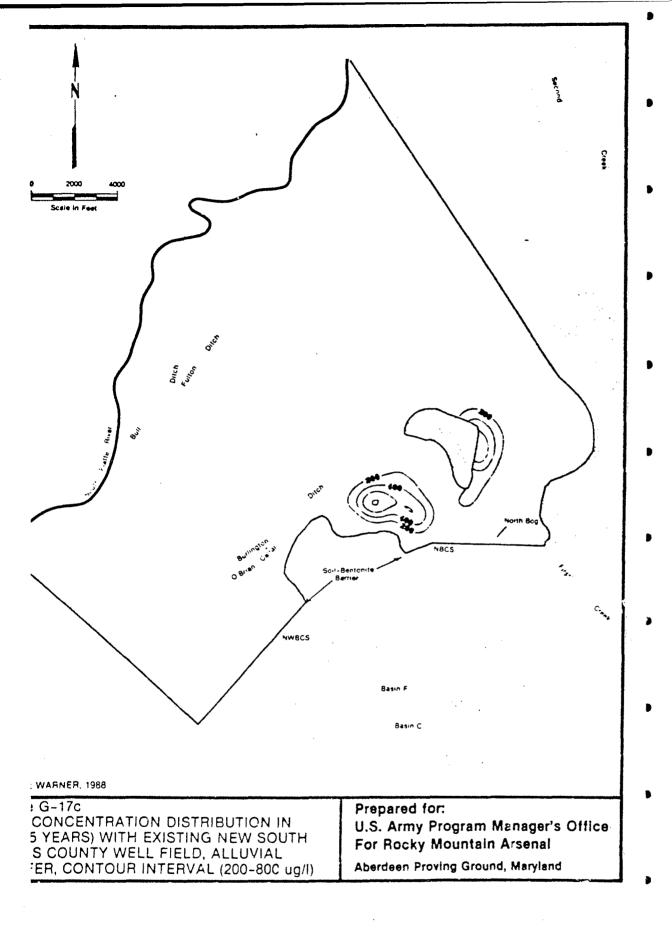


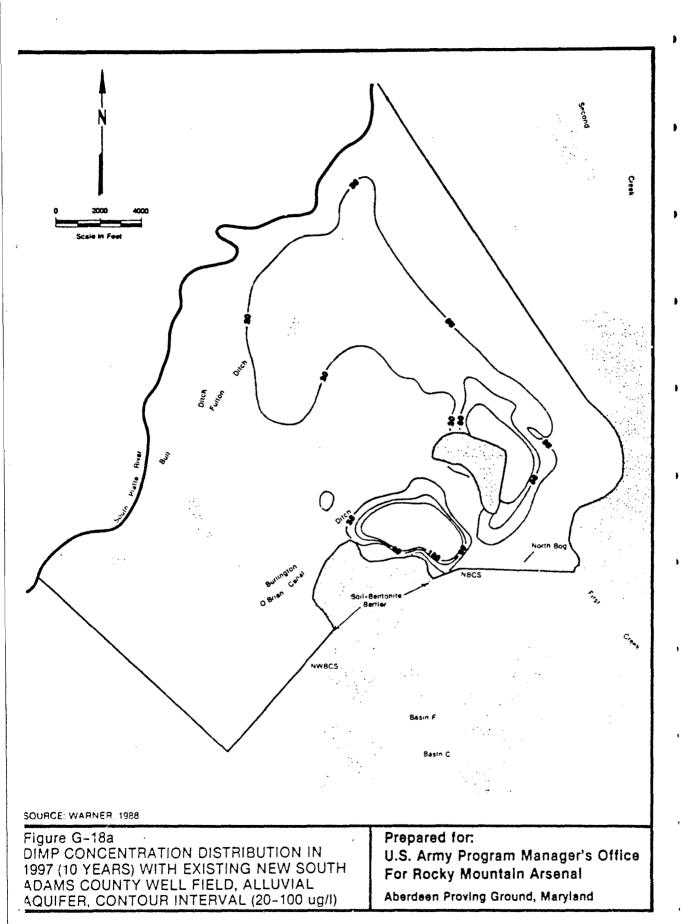


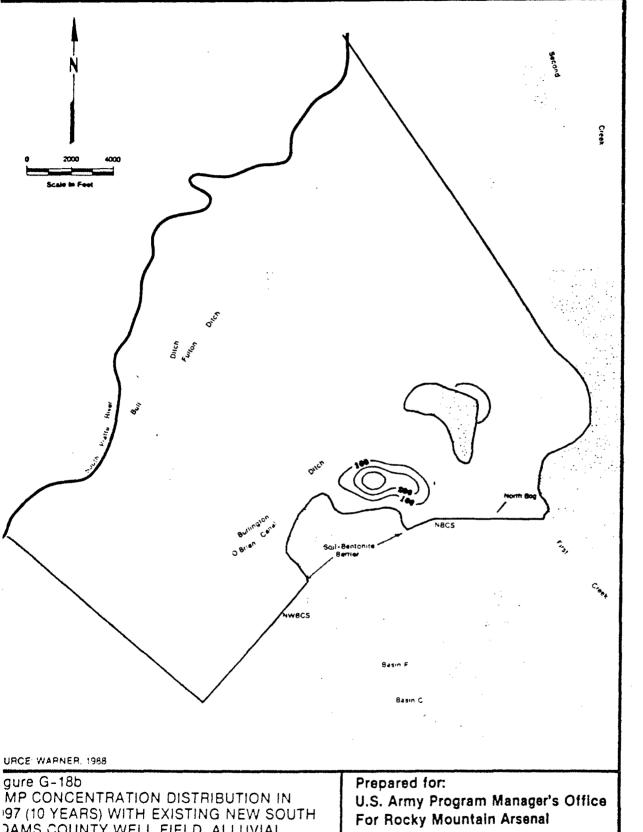
re G-17a CONCENTRATION DISTRIBUTION IN (5 YEARS) WITH EXISTING NEW SOUTH MS COUNTY WELL FIELD, ALLUVIAL FER, CONTOUR INTERVAL (20-100 ug/l)



9 G-17b
CONCENTRATION DISTRIBUTION IN
(5 YEARS) WITH EXISTING NEW SOUTH
1S COUNTY WELL FIELD, ALLUVIAL
FER, CONTOUR INTERVAL (100-200 ug/l)

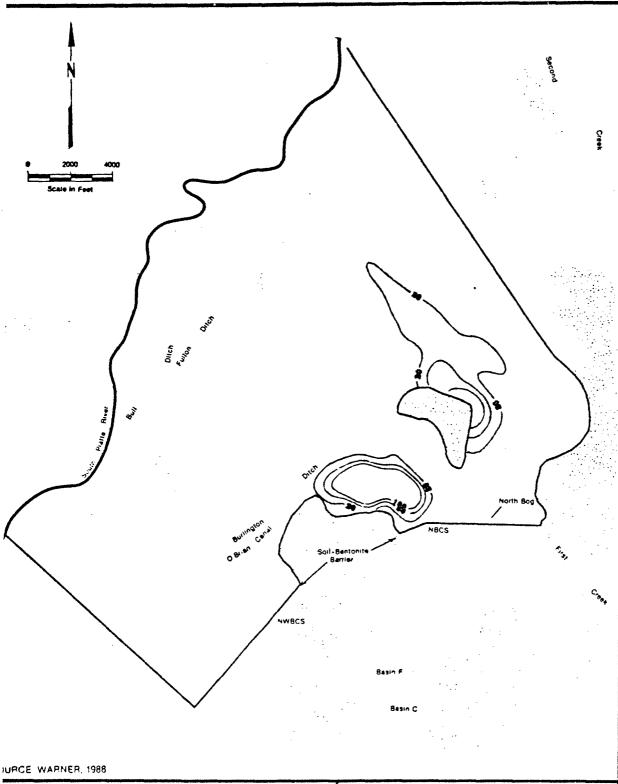




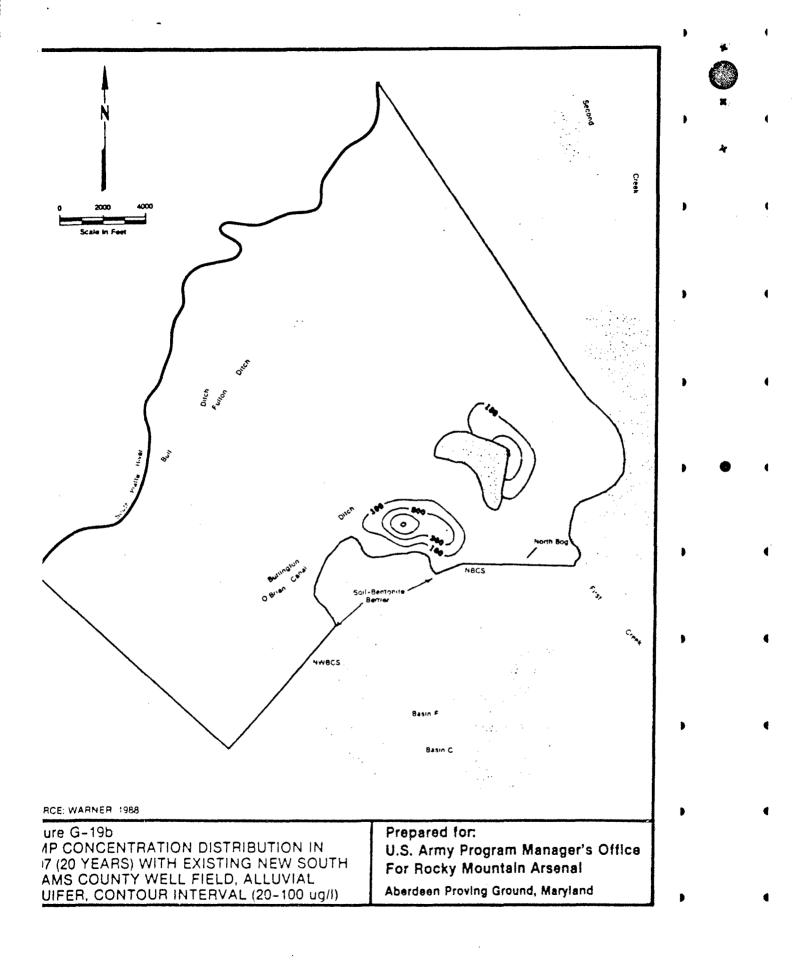


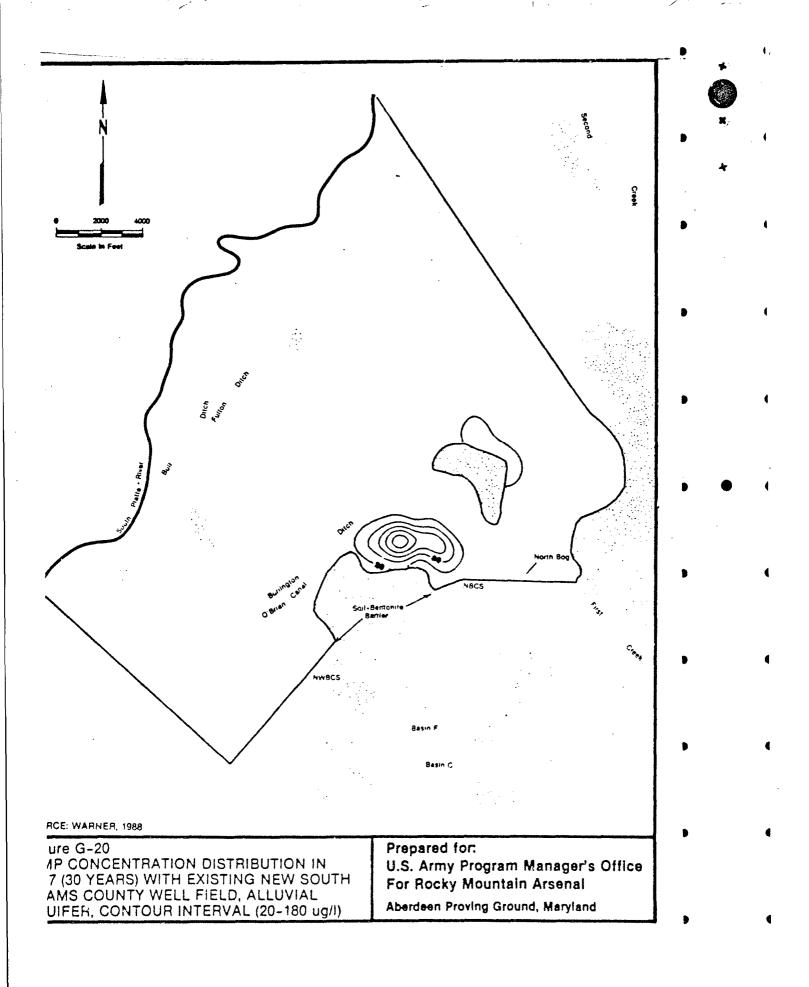
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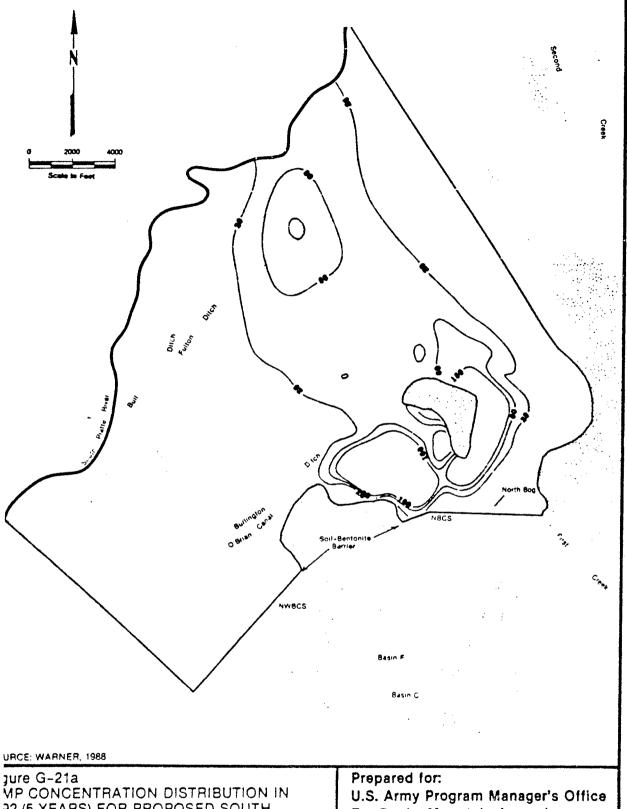
Aberdeen Proving Ground, Maryland



gure G-19a
IMP CONCENTRATION DISTRIBUTION IN
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DAMS COUNTY WELL FIELD, ALLUVIAL
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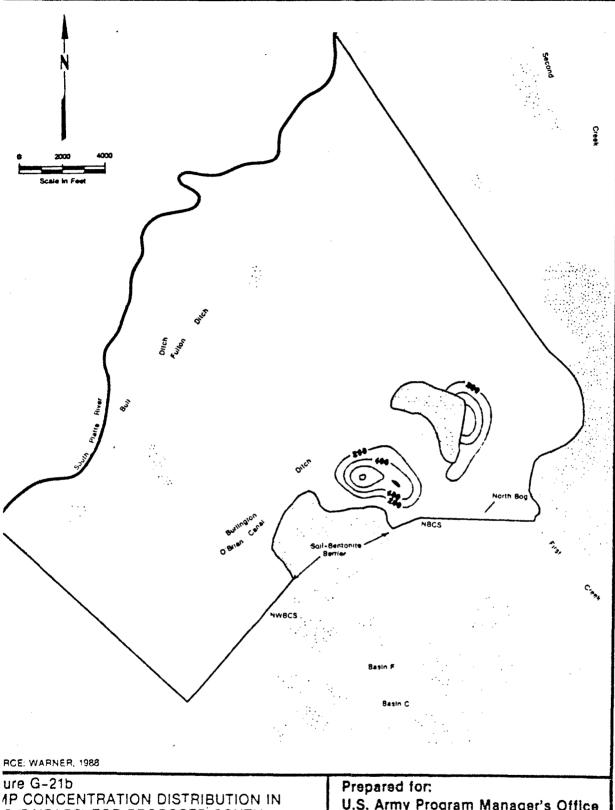






92 (5 YEARS) FOR PROPOSED SOUTH DAMS COUNTY WELL FIELD, ALLUVIAL DUIFER, CONTOUR INTERVAL (20-100 ug/l)

For Rocky Mountain Arsenal Aberdeen Proving Ground, Maryland



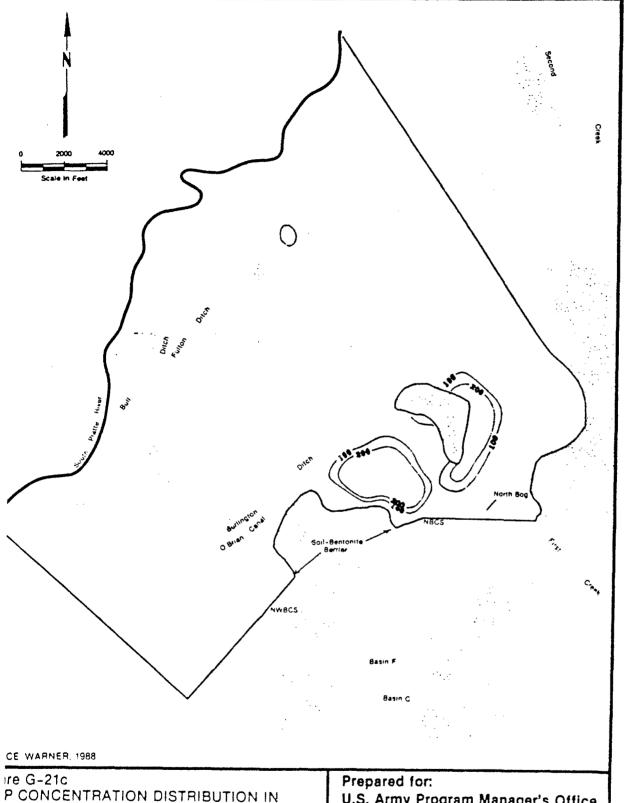
ure G-21b

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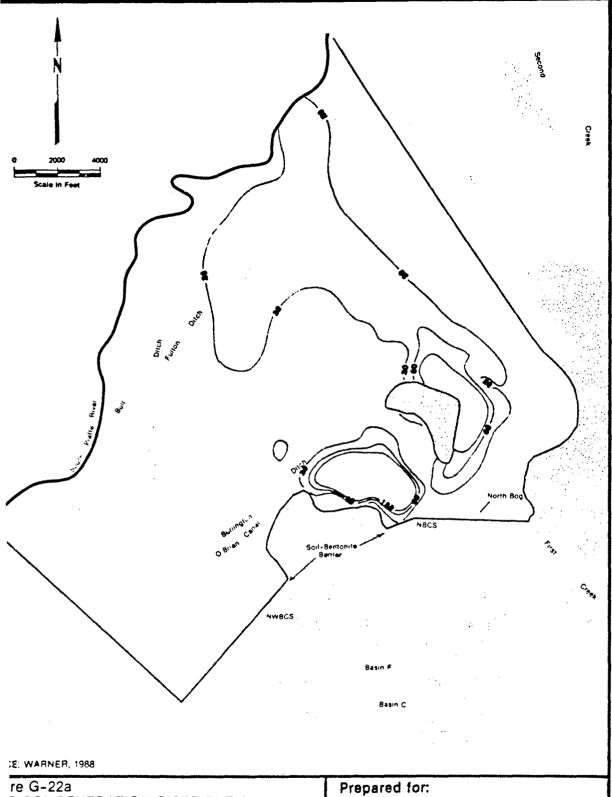
2 (5 YEARS) FOR PROPOSED SOUTH

AMS COUNTY WELL FIELD, ALLUVIAL

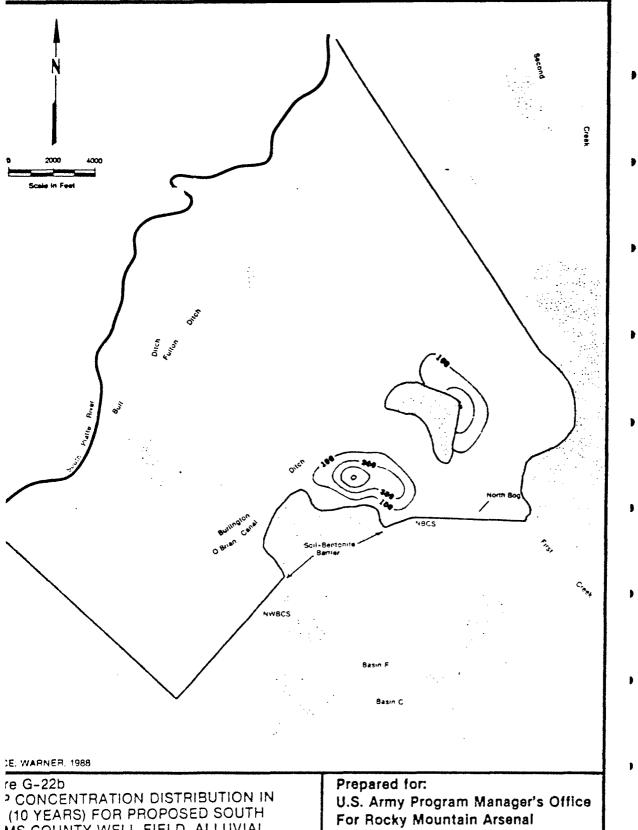
UIFER, CONTOUR INTERVAL (200-800 ug/l)



P CONCENTRATION DISTRIBUTION IN (5 YEARS) FOR PROPOSED SOUTH MS COUNTY WELL FIELD, ALLUVIAL FIER, CONTOUR INTERVAL (100-200 ug/l)

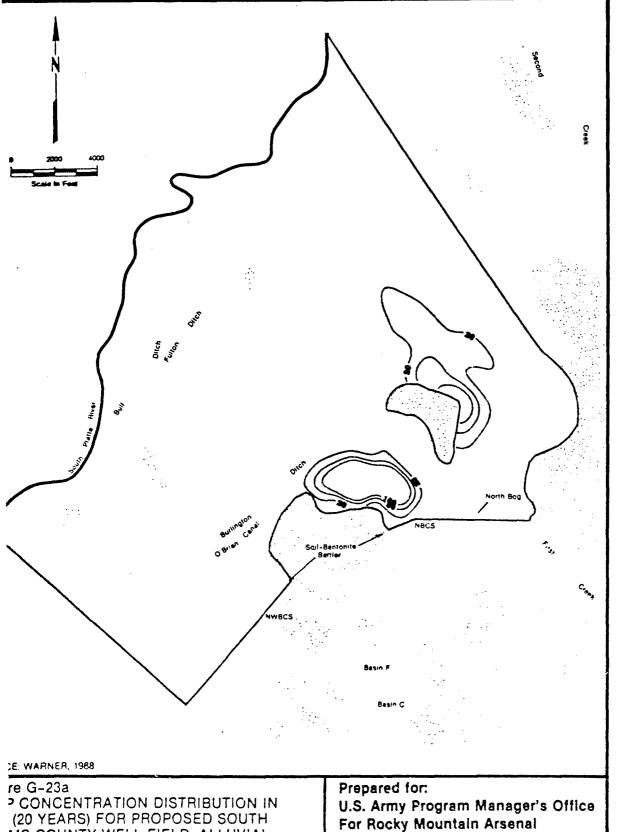


re G-22a
P CONCENTRATION DISTRIBUTION IN
(10 YEARS) FOR PROPOSED SOUTH
MS COUNTY WELL FIELD, ALLUVIAL
IFER, CONTOUR INTERVAL (20-100 ug/l)



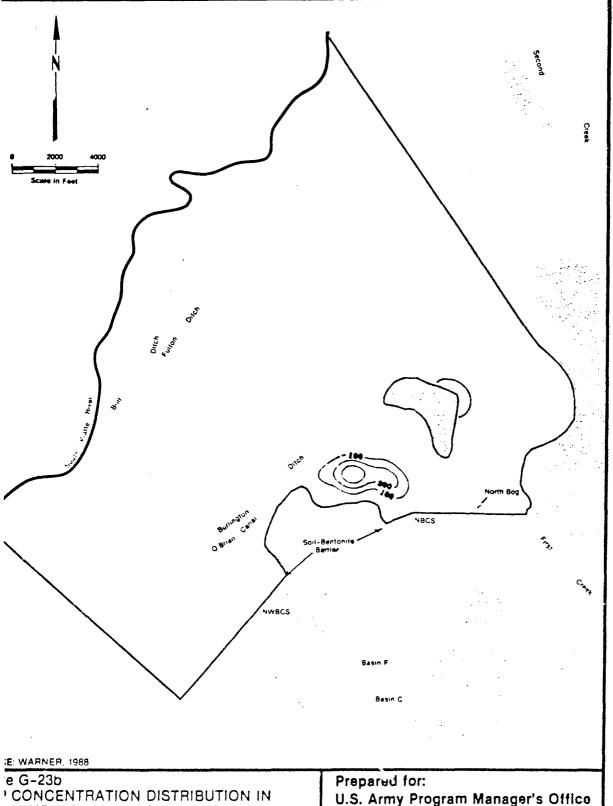
CONCENTRATION DISTRIBUTION IN
(10 YEARS) FOR PROPOSED SOUTH
MS COUNTY WELL FIELD, ALLUVIAL
IFER, CONTOUR INTERVAL (100-700 ug/l)

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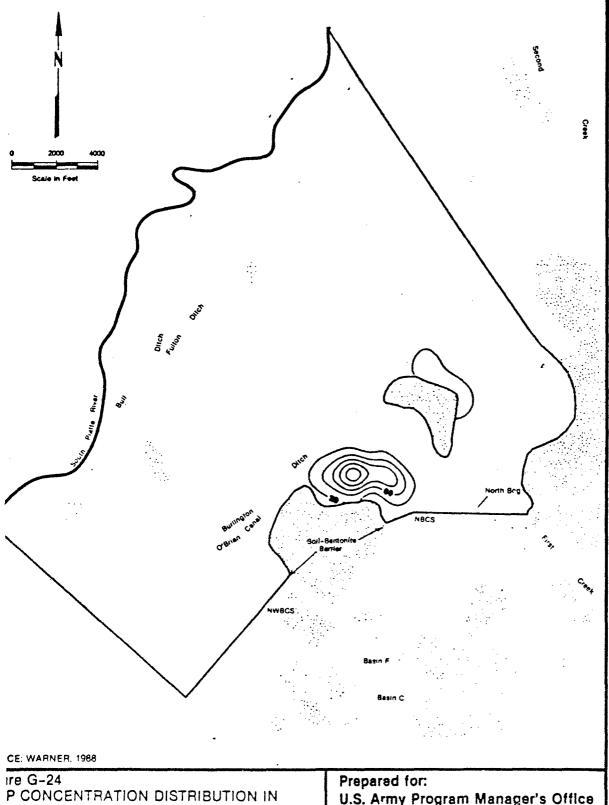


MS COUNTY WELL FIELD, ALLUVIAL IFER, CONTOUR INTERVAL (20-100 ug/l)

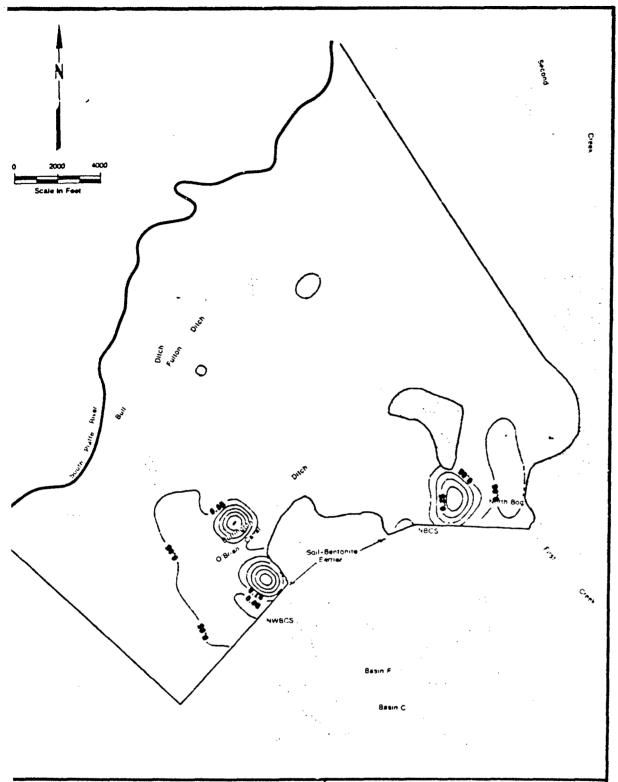
Aberdeen Proving Ground, Maryland



e G-23b
CONCENTRATION DISTRIBUTION IN
(20 YEARS) FOR PROPOSED SOUTH
MS COUNTY WELL FIELD, ALLUVIAL
FER, CONTOUR INTERVAL (100-300 ug/l)



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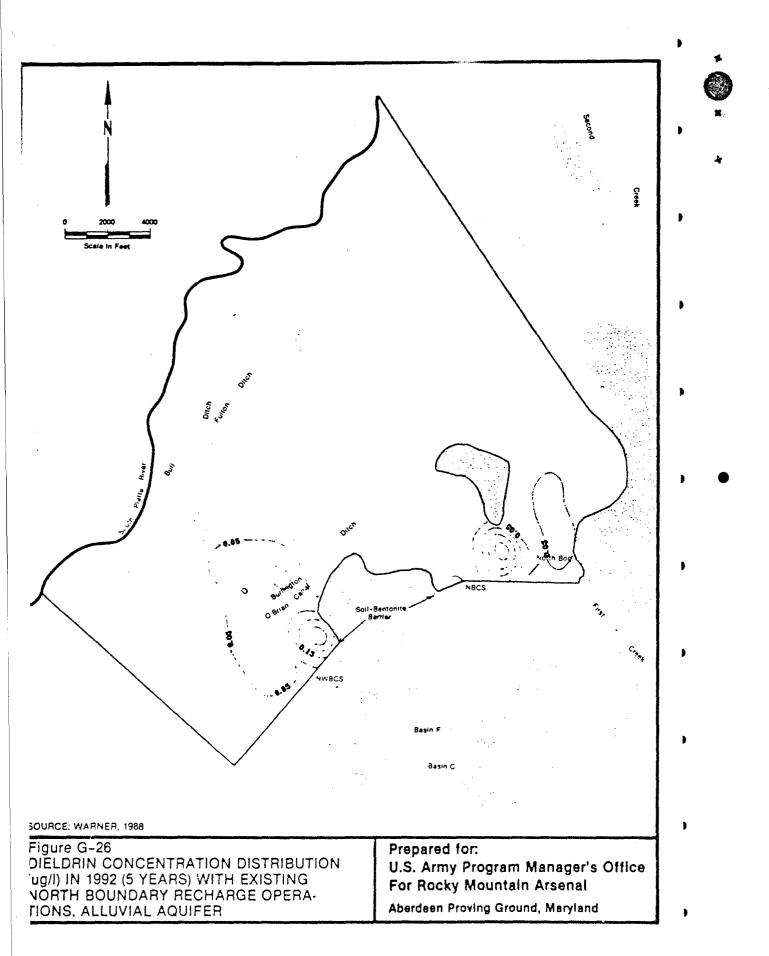
e G-25

DRIN CONCENTRATION DISTRIBUTION 1987, ALLUVIAL AQUIFER E: WARNER, 1988

Prepared for:

U.S. Army Program Manager's Office For Rocky Mountain Arsenal

Aberdeen Proving Ground, Maryland



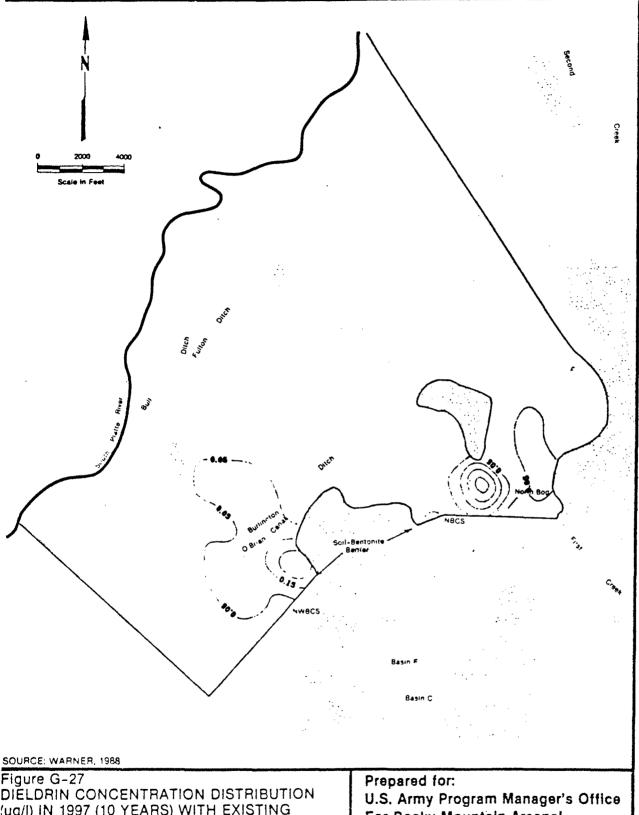
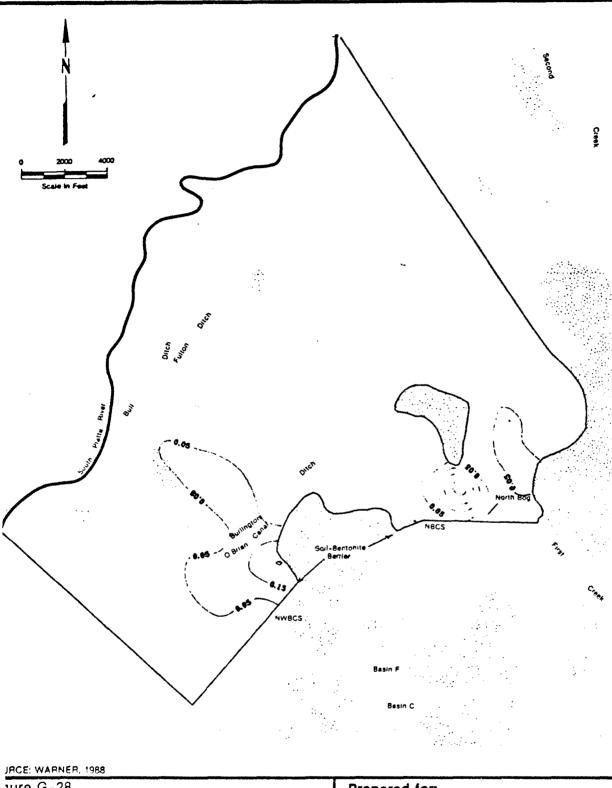
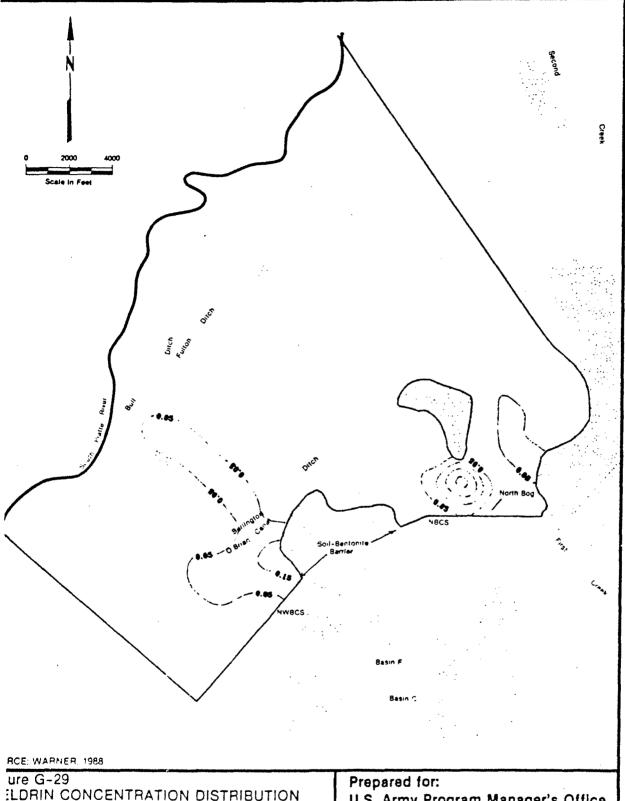


Figure G-27
DIELDRIN CONCENTRATION DISTRIBUTION
(ug/l) IN 1997 (10 YEARS) WITH EXISTING
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OPERATIONS, ALLUVIAL AQUIFER

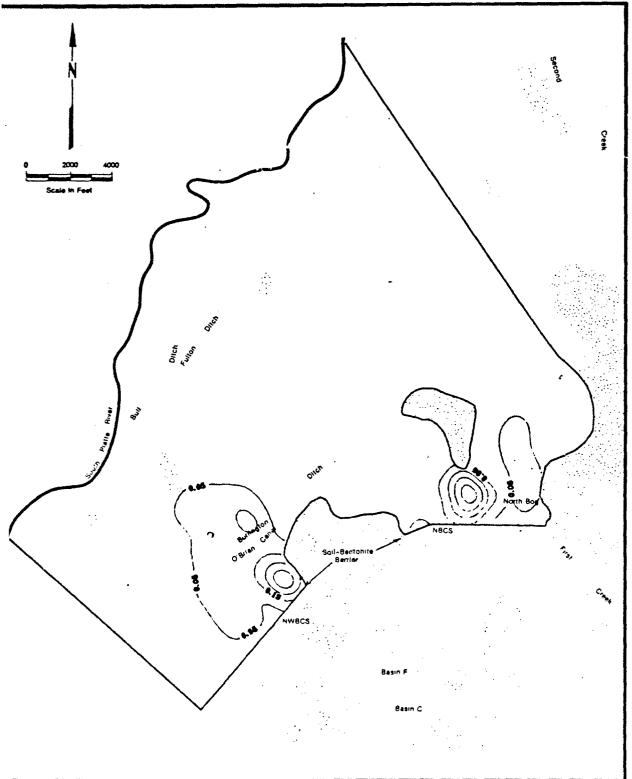
For Rocky Mountain Arsenal Aberdeen Proving Ground, Maryland



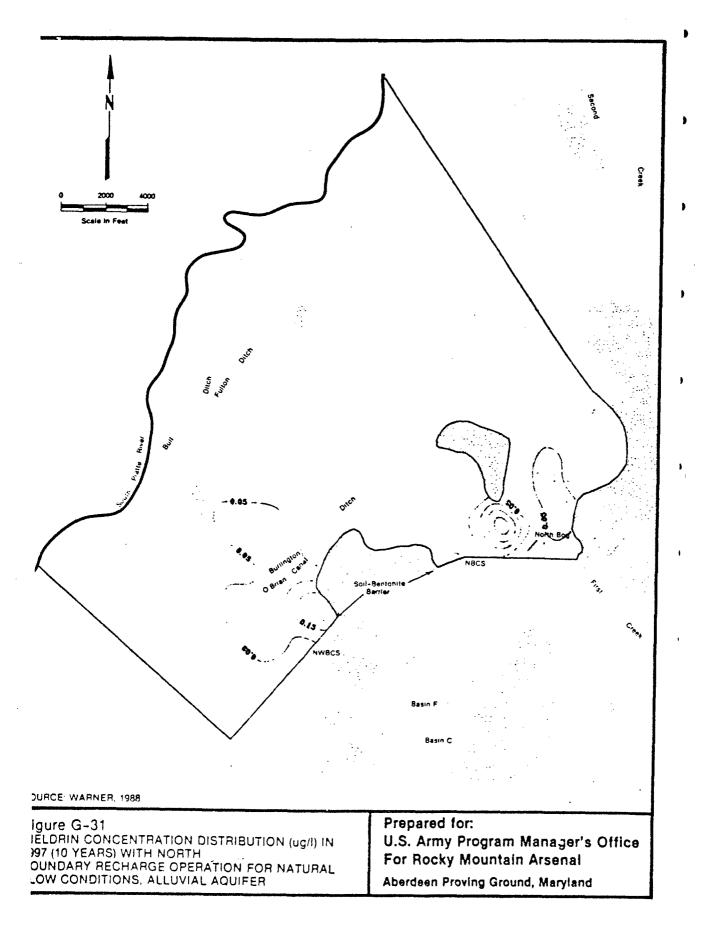
Jure G-28
ELDRIN CONCENTRATION DISTRIBUTION
(II) IN 2007 (20 YEARS) WITH EXISTING
)RTH BOUNDARY RECHARGE
'ERATIONS, ALLUVIAL AQUIFER

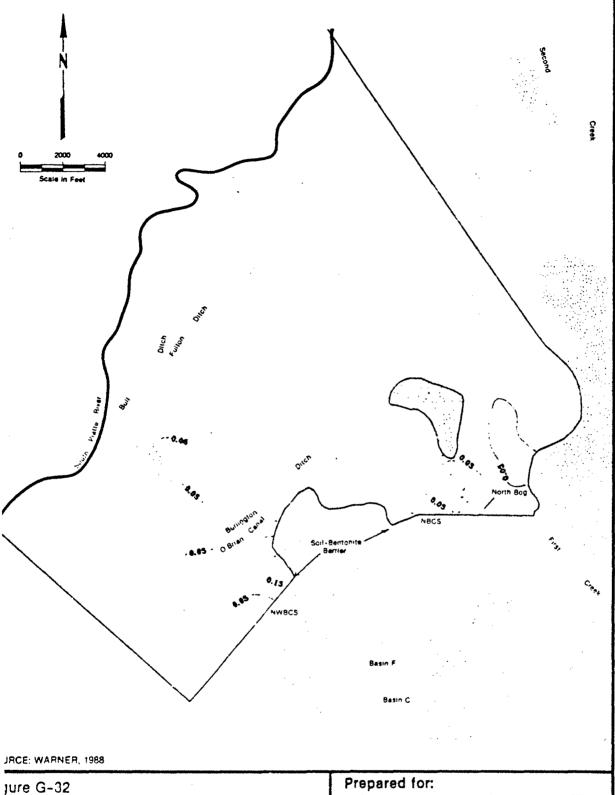


ure G-29
ELDRIN CONCENTRATION DISTRIBUTION
II) IN 2017 (30 YEARS) WITH EXISTING
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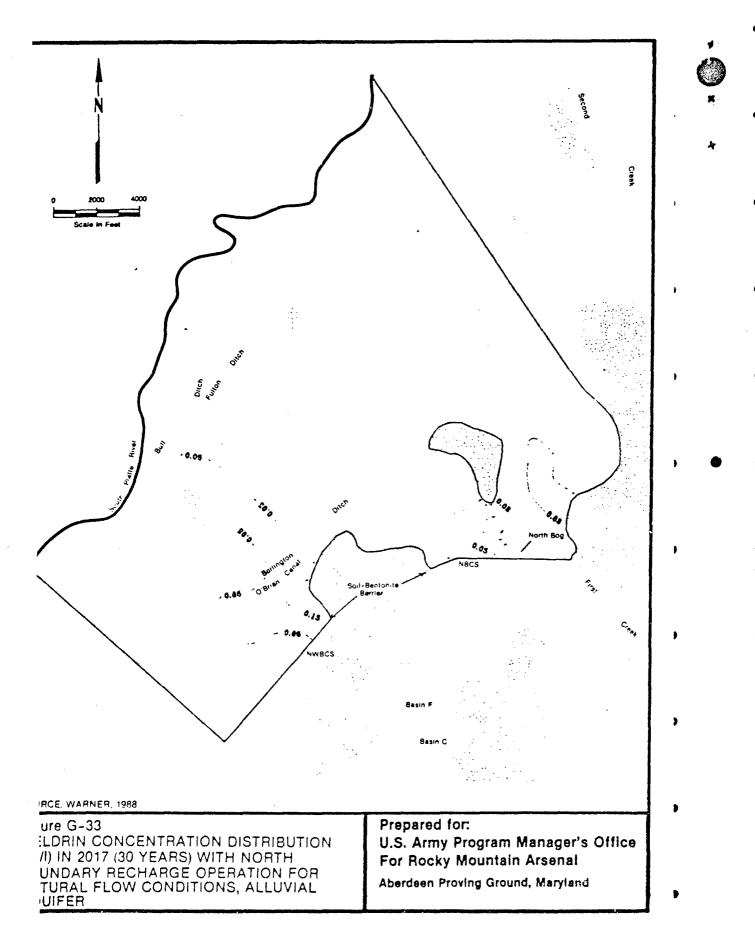


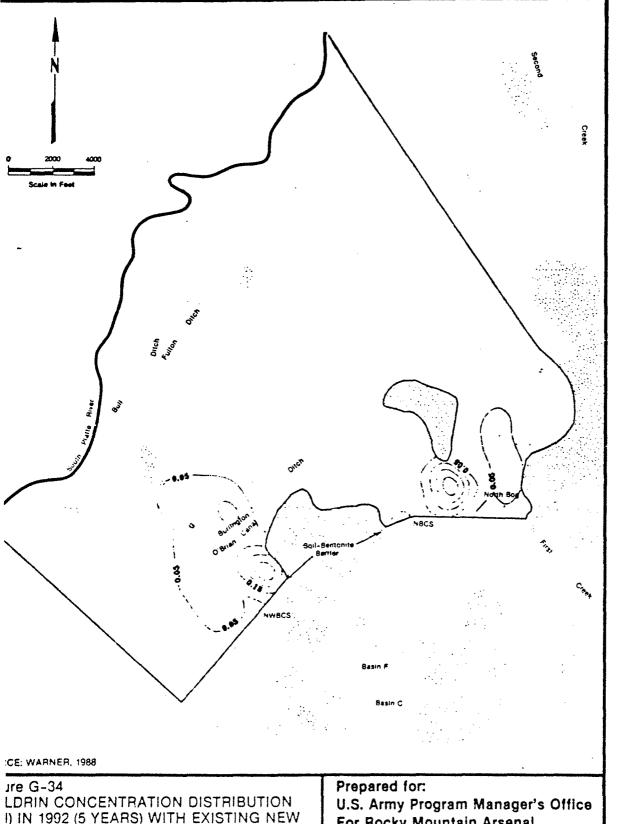
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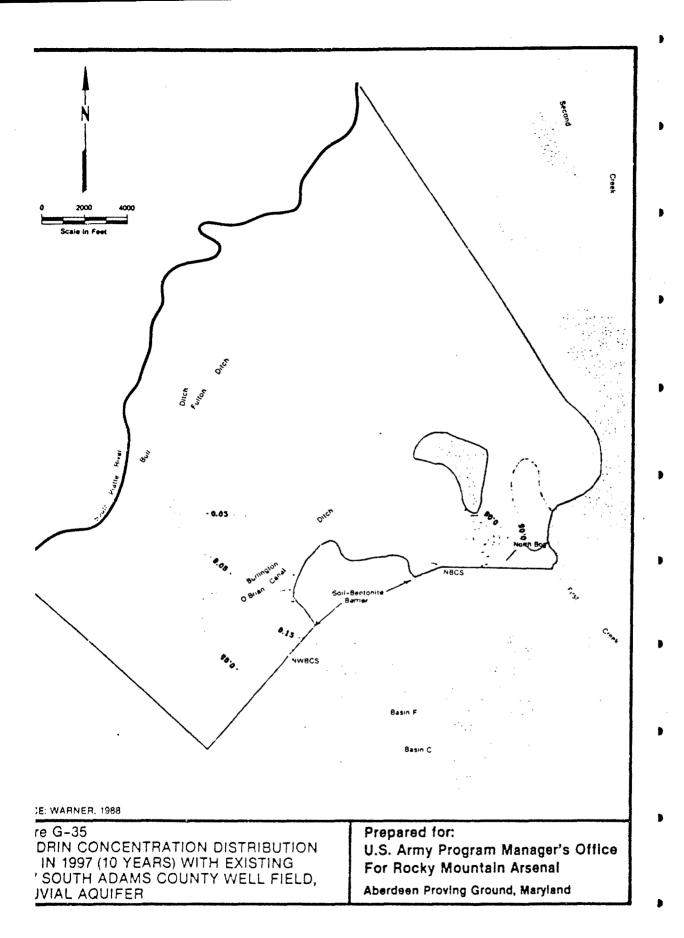
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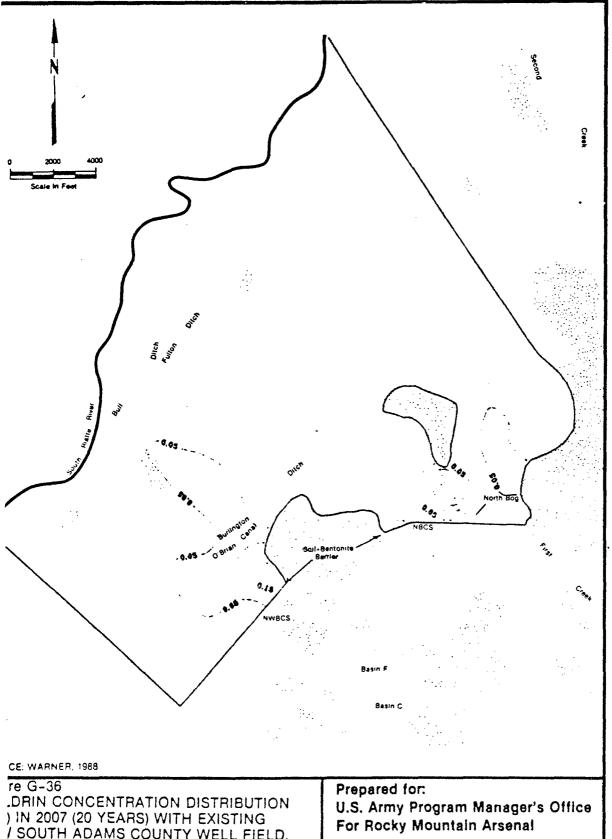




LDRIN CONCENTRATION DISTRIBUTION I) IN 1992 (5 YEARS) WITH EXISTING NEW JTH ADAMS COUNTY WELL FIELD, UVIAL AQUIFER

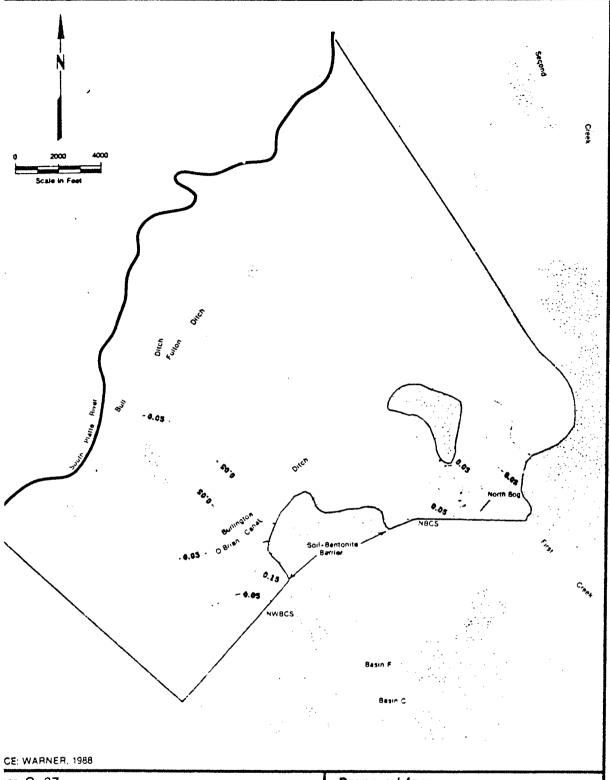
For Rocky Mountain Arsenal Aberdeen Proving Ground, Maryland



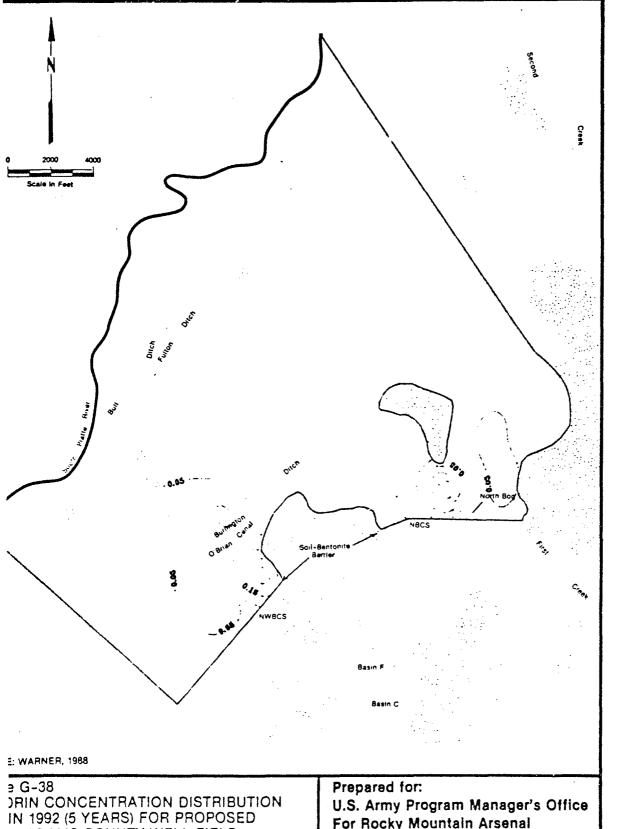


) IN 2007 (20 YEARS) WITH EXISTING / SOUTH ADAMS COUNTY WELL FIELD, JVIAL AQUIFER

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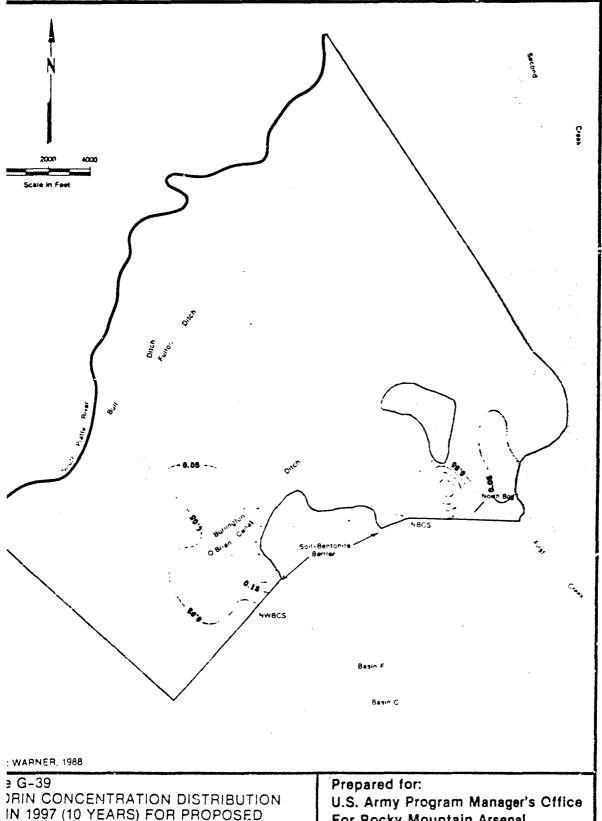


Ire G-37
\_DRIN CONCENTRATION DISTRIBUTION
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PRIN CONCENTRATION DISTRIBUTION IN 1992 (5 YEARS) FOR PROPOSED H ADAMS COUNTY WELL FIELD, VIAL AQUIFER

For Rocky Mountain Arsenal Aberdeen Proving Ground, Maryland



DRIN CONCENTRATION DISTRIBUTION IN 1997 (10 YEARS) FOR PROPOSED H ADAMS COUNTY WELL FIELD. VIAL AQUIFER

For Rocky Mountain Arsenal Aberdeen Proving Ground, Maryland

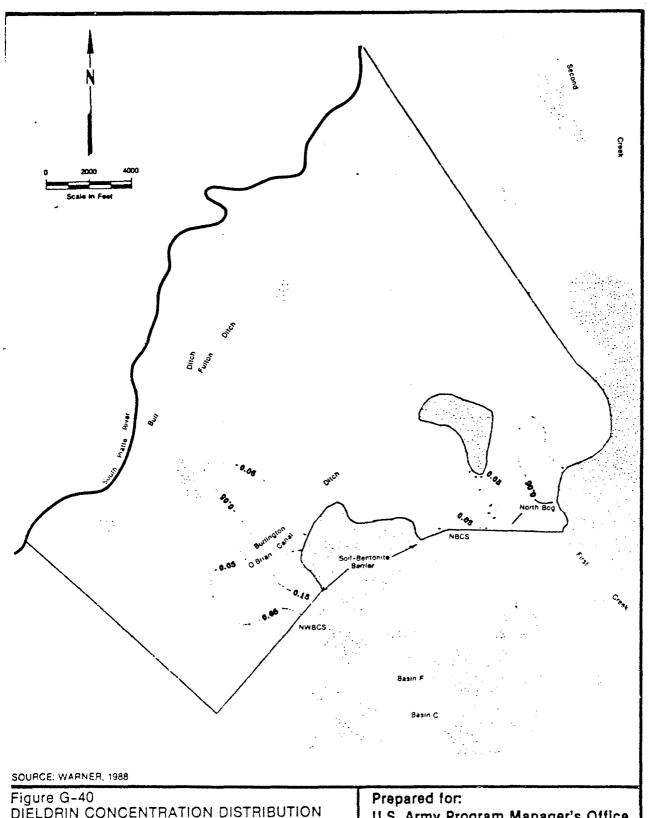
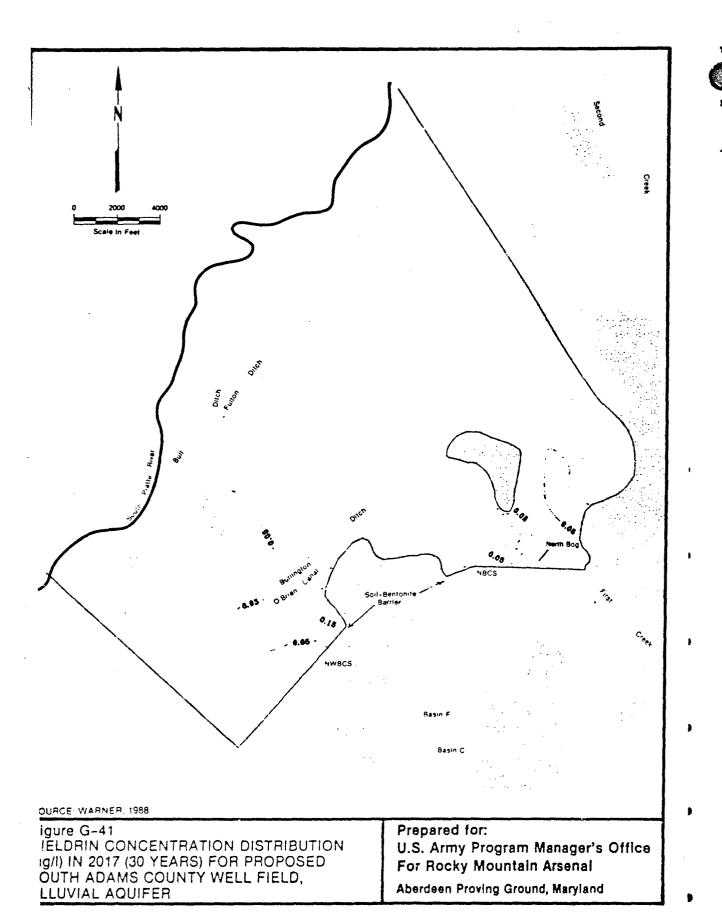
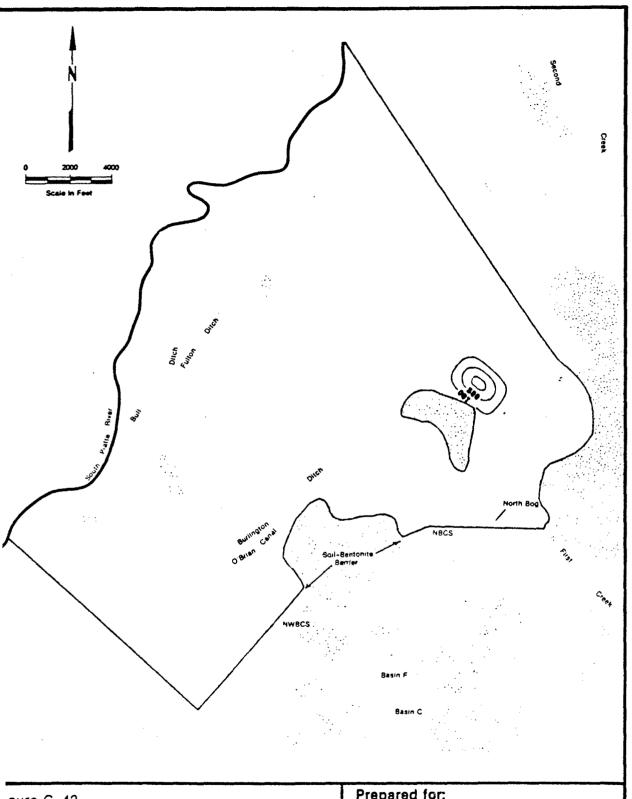
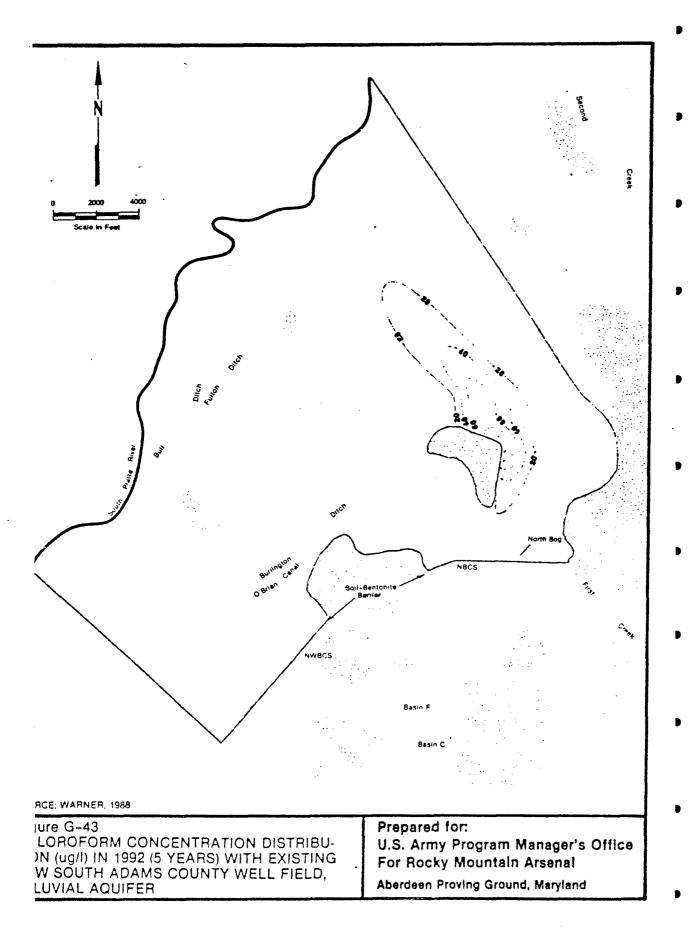


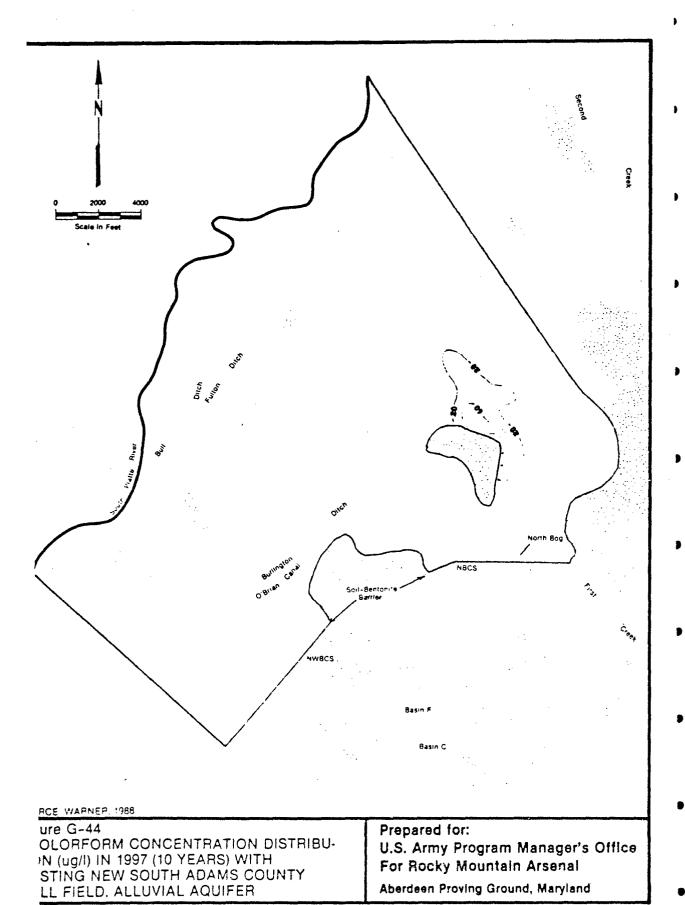
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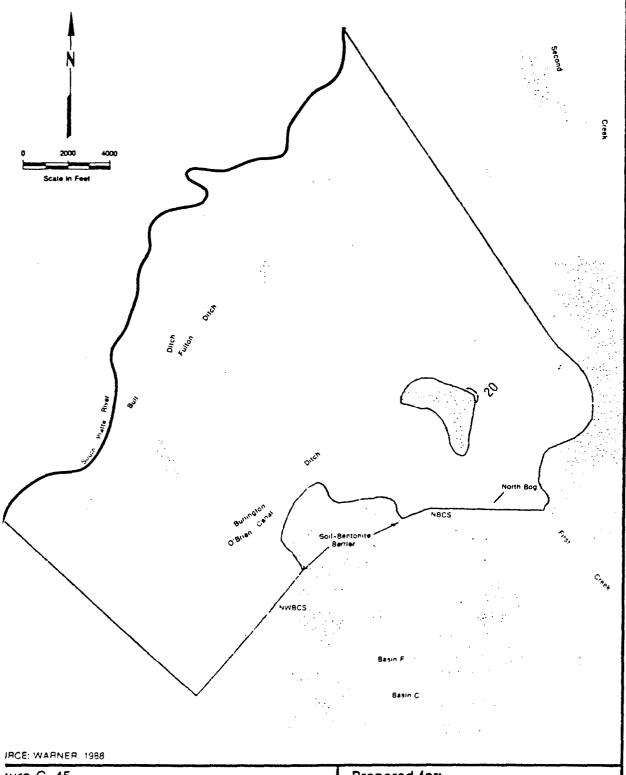




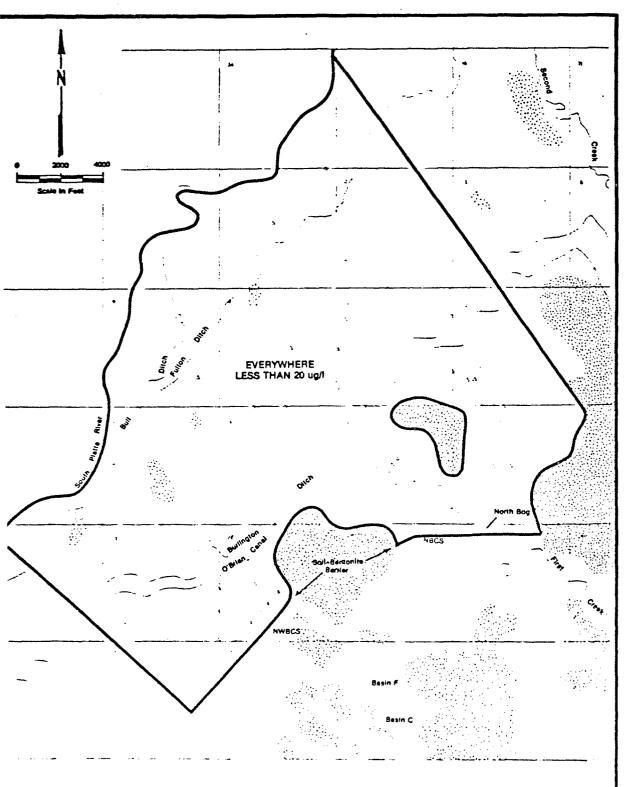
gure G-42 HLOROFORM CONCENTRATION DISTRIBU-ON (ug/l) 1987 ALLUVIAL AQUIFER URCE: WARNER, 1988





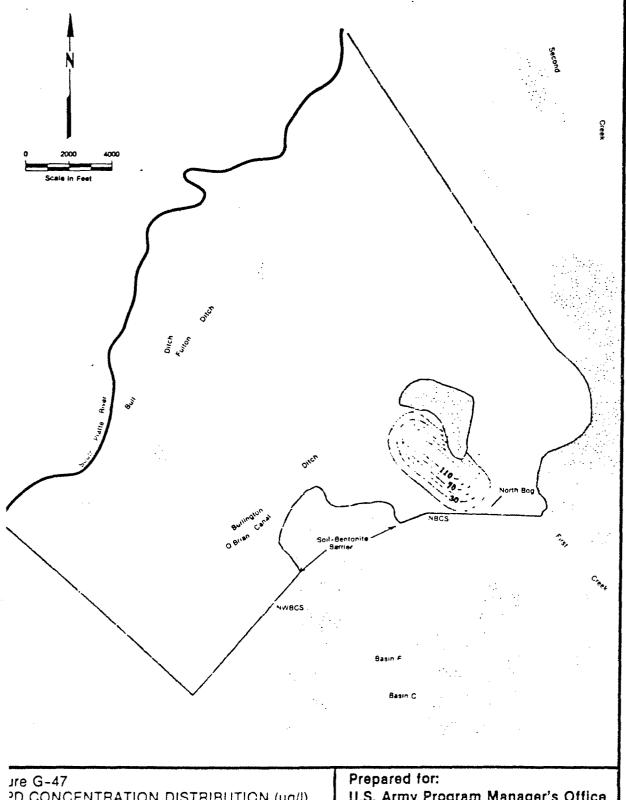


Jure G-45
IOLROFORM CONCENTRATION DISTRIBU)N (ug/l) IN 2007 (20 YEARS) WITH
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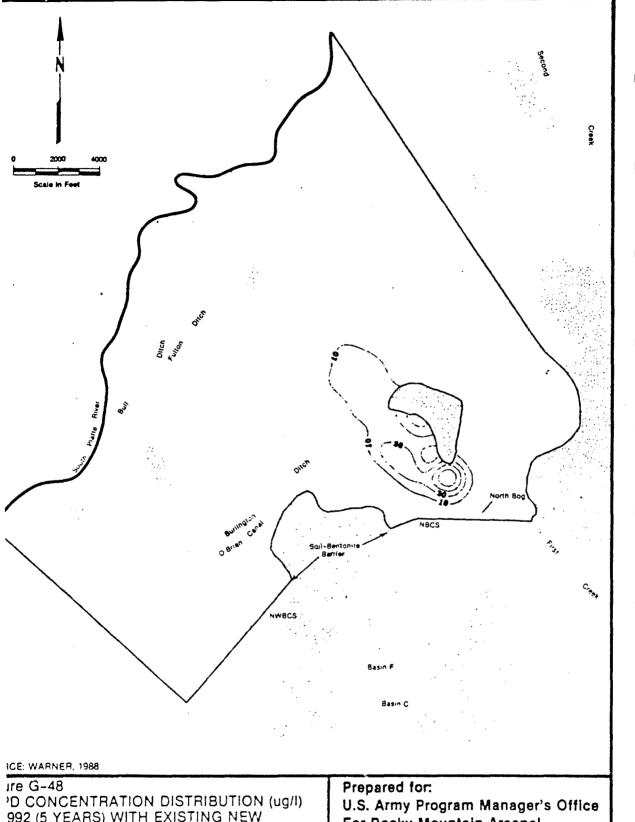
TE G-46

DROFORM CONCENTRATION DISTRIBUTION
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ITH ADAMS COUNTY WELL FIELD, ALLUVIAL
FER
E: WARNER, 1988



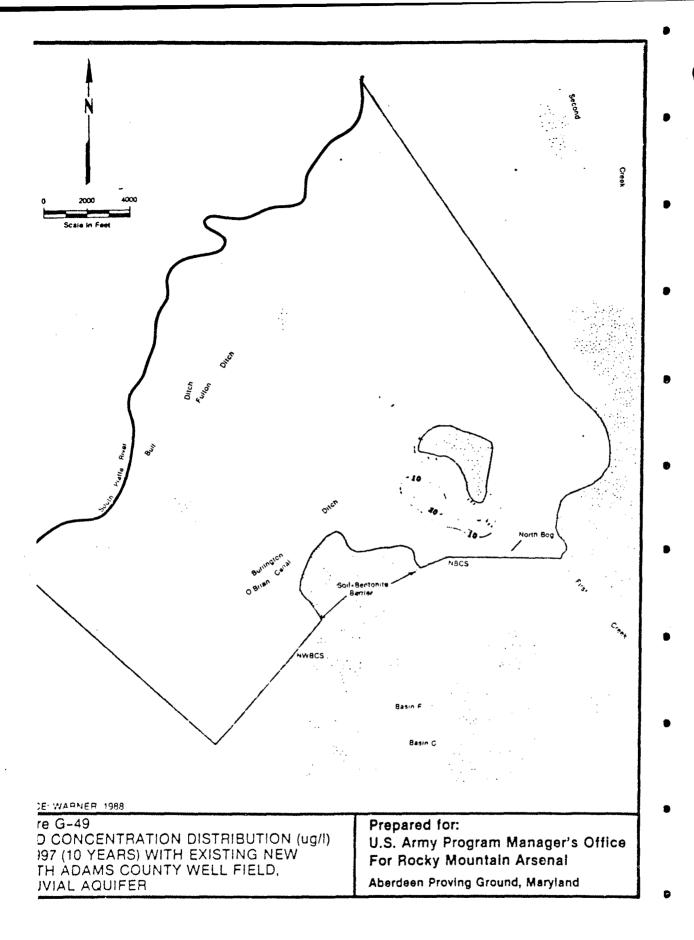
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O CONCENTRATION DISTRIBUTION (ug/l)
7, ALLUVIAL AQUIFER

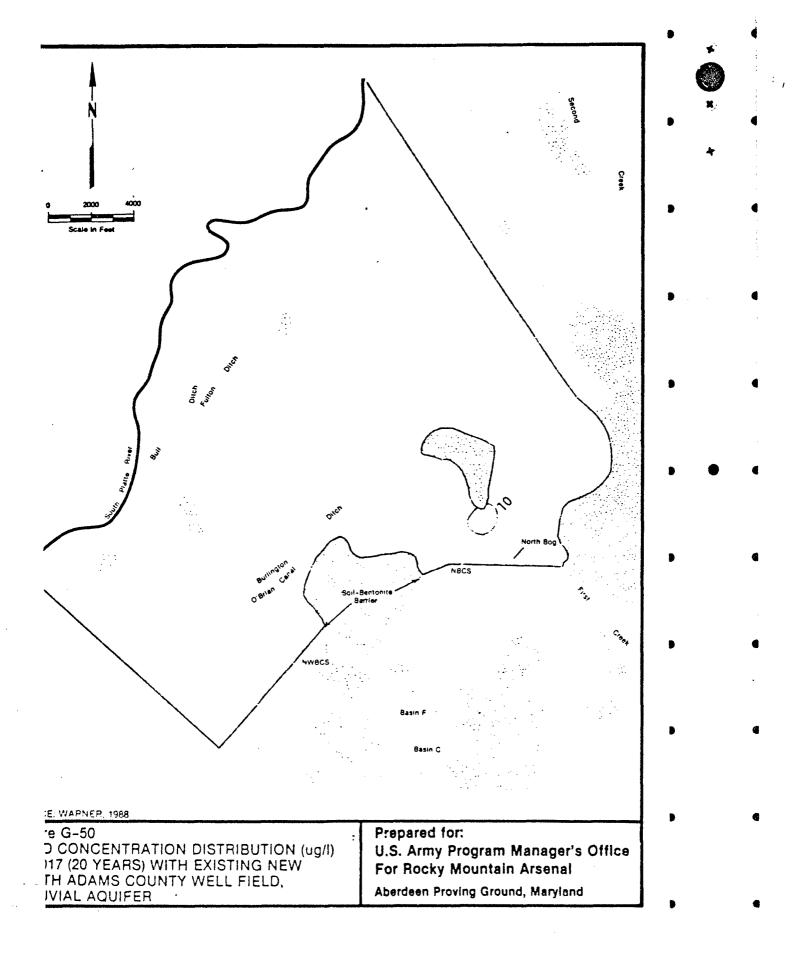
CE: WARNER, 1988

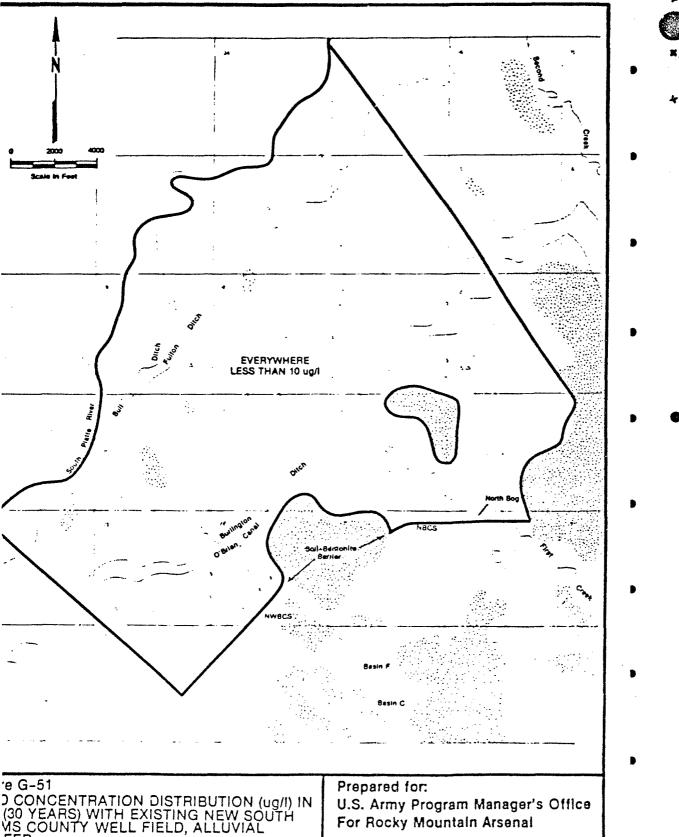


D CONCENTRATION DISTRIBUTION (ug/l)
992 (5 YEARS) WITH EXISTING NEW
ITH ADAMS COUNTY WELL FIELD,
UVIAL AQUIFER

For Rocky Mountain Arsenal Aberdeen Proving Ground, Maryland







O CONCENTRATION DISTRIBUTION (ug/l) IN (30 YEARS) WITH EXISTING NEW SOUTH WS COUNTY WELL FIELD, ALLUVIAL FER E: WARNER 1988

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## INTRODUCTION

## A. CONTENTS OF APPENDIX

This Appendix sets forth the potential applicable or relevant and appropriate standards, requirements, criteria or limitations (ARARs) for air, ground water, soil, surface water or biota for use in the Endangerment Assessment for the Off-Post Operable Unit, as well as specifies whether: (i) the designated chemicals constitute CERCLA Hazardous Substances; (ii) are ranked as a potential human health risk on the priority-order list prepared by the U.S. Environmental Protection Agency (EPA) and the Agency for Toxic Substances and Disease Registry (ATSDR), 52 Fed. Reg. 12866 (1987); (iii) are air analytes; (iv) are ground water remedial investigation (RI) analytes; (v) are soil RI analytes; (vi) are soil EA analytes; (vii) are surface water RI analytes; or (viii) are biota RI analytes. (A separate but similar volume has been issued earlier to identify the potential chemical-specific ARARs for the On-Post Operable Unit.)

Where potential duly promulgated ARARs exist at this time for the designated chemicals, these are identified in this volume by citation to both the controlling regulatory provision and the relevant ARAR limit, standard or criterion derived from that regulation. For these purposes, all pertinent statutes and regulations of the EPA, U.S. Food and Drug Administration (FDA), and the State of Colorado (State) available through December 30, 1988, were reviewed to determine their suitability for inclusion in this document as potential ARARs.

# B. PROCESS FOR SELECTING CHEMICAL-SPECIFIC ARARS

By issuing this list of potential ARARs, the Army does not purport to determine which of these regulations are applicable and which are relevant and appropriate, or even to represent that all of these regulations warrant selection as some form of ARARs for the Off-Post Operable Unit. Rather, this appendix of potential ARARs is prepared solely to ensure that decisionmaking with respect to the Off-Post Endangerment Assessment will be fully informed with respect to all existing regulations that merit consideration as ARARs.

It should be noted that the accompanying list of chemical-specific ARARs will be up-dated in the context of the Off-Post RMA Feasibility Study/Endangerment Assessment Report to reflect any Federal or pertinent State chemical-specific regulations promulgated prior to the issuance of the proposed final version of that report in the Spring of 1989.

The actual selection of ARARs for this portion of the RI/FS will occur in the context of the Off-Post RMA Feasibility Study/Endangerment Assessment Report in accordance with the terms of CERCLA Section 121(d)(2), 42 U.S.C. § 9621(d), the National Contingency Plan (NCP), EPA guidance that is not inconsistent with CERCLA and the NCP, and the proposed Consent Decree (including the RI/FS Process document).

The first step in this process will be to determine the chemicals for which an ARAR determination is warranted since 42 U.S.C. § 9621(d) provides that ARARs are to be selected only for hazardous substances, pollutants, or contaminants. Second, it will be necessary for the Army to determine whether ARARs exist for the designated

hazardous substances, pollutants or contaminants. Third, the Army will determine the ARARs to be attained for purposes of remedial action on the Off-Post Operable Unit and whether any ARARs should be waived in accordance with CERCLA's provisions. (Where either there is no existing ARAR or no ARAR is selected for a particular chemical compound, the Endangerment Assessment will set levels or standards of control through the risk assessment process that are to be protective of human health and the environment.) The Off-Post chemical-specific ARARs selected by the Army will be set forth in the Endangerment Assessment Report.

## C. POTENTIAL AIR ARARS

For the potential air ARARs for RMA contaminants in the Off-Post Operable Unit, all generally pertinent National Ambient Air Quality Standards (NAAQS) and Natural Emission Standards for Hazardous Air Pollutants (NESHAP) are identified.

No air ARARs have been expressly designated for the Off-Post Operable Unit for particulate matter because such particulate standards are not chemical-specific.

Nevertheless, for purposes of clean-up of the RMA Off-Post Operable Unit, it should be noted that the provisions of 40 C.F.R. § 50.6 will be a potential ARAR: There will be no particulate matter (of whatever chemical) transported from RMA by air that is in excess of 75 micrograms per cubic meter--annual geometric mean and that 260 micrograms per cubic meter--maximum 24-hour concentration will not be exceeded more than once a year.

## D. POTENTIAL GROUND WATER ARARS

Potential ground water ARARs for RMA contaminants in the Off-Post Operable Unit include Maximum Contaminant Levels (MCL) and non-zero Maximum Contaminant Level Goals (MCLG) from the National Primary Drinking Water Regulations (NPDW), 40 C.F.R. Part 141, the Clean Water Act's Toxic Pollutant Effluent Standards (TPES), 40 C.F.R. Part 129, the ground water protection standards of the Resource Conservation and Recovery Act, 40 C.F.R. Part 264 regulations (RCRA), non-zero human health protection provisions of the Ambient Water Quality Criteria (AWQC), 45 Fed. Reg. 79318 (1980)<sup>1</sup>, and FDA's Tolerances for Pesticides in Food Administered by EPA (TPF).

## E. POTENTIAL SOIL ARARS

No potential chemical-specific ARARs were identified that might pertain to the RMA chemicals in the soils in the Army's Off-Post Operable Unit.

# F. POTENTIAL SURFACE WATER ARARS

Potential surface water ARARs for RMA contaminants in the lakes and streams of the Off-Post Operable Unit are similar to those for potential ground water (including

It should be noted that whether the AWQC values designated herein as potential ground water ARARs are appropriate for utilization as ARARs is a matter that warrants serious consideration during the course of Endangerment Assessment decisionmaking. Since the indicated AWQC values are predicated on human consumption both of water and aquatic organisms in that water, and ground water does not contain aquatic life, use of alternative values (such as the adjusted AWQC found in the 1986 Superfund Public Health Evaluation Manual) may well be more appropriate in connection with ground water.

the NPDW, the TPES, RCRA, the non-zero human protection provisions of the AWQC and the TPFA), as well as the non-zero fresh water aquatic life protection provisions of AWQC.

# G. POTENTIAL BIOTA ARARS

While there are no chemical-specific ARARs for RMA contaminants that pertain to the wild flora and fauna found in the Army's Off-Post Operable Unit (except for the aquatic life AWQC set for surface water), the levels that EPA and FDA have set for domesticated crops and animals with respect to pesticides found on or in such raw farm commodities will be a useful aid to ARAR-decisionmaking for such domestic acriculture in the Endangerment Assessment (and may also have utility with respect to wild flora and fauna on a case-by-case basis). Accordingly, EPA's Tolerances for Pesticide Chemicals On or In Raw Agricultural Commodities (TPCRAC), 40 C.F.R. Part 180, and the FDA's TPFA have been identified. It should be noted that the designated pesticide tolerances are not the same as action levels. As EPA has previously explained, "[t]here are major differences between tolerances and action levels. A tolerance is set before the fact to cover residues which will result from legal and purposeful use of the pesticide. An action level is a more appropriate mechanism for situations involving residues which persist in the environment after the once-legal use of that pesticide has been halted." 51 Fed. Reg. 46666 (1986). Thus, while EPA's pesticide tolerance level information is provided here (along with FDA action levels) to aid ARAR

decisionmaking, it is only during the course of ARAR selection that the relevance, if any, of these tolerance levels to the RMA cleanup will be determined.<sup>2</sup>

#### H. POTENTIAL STATE ARARS

In accordance with CERCLA Section 121, State statutes and regulations warrant consideration as potential ARARs only where they meet the three-part test of being:

(i) promulgated; (ii) more stringent than any Federal ARAR; and (iii) could not effectively result in the statewide prohibition of land disposal (where the State standard is not of general applicability or adopted on the basis of hydrologic, geologic or other relevant considerations). To date the State has not identified any chemical-specific ARARs pertinent to the Off-Post Operable Unit that satisfy the three elements of this test, and the Army has been unable to identify any existing State regulations that satisfy this CERCLA criteria. Thus, no State chemical-specific ARARs are cited in the current edition of this appendix as potential ARARs.

#### I. EXCLUSION OF WORKER PROTECTION REGULATIONS FROM APPENDIX

It should be noted that worker protection regulations are not treated as chemicalspecific ARARs for purposes of this appendix. These will be separately addressed for

With respect to certain of the chemicals that do not have designated tolerance levels, it should be noted that EPA has revoked the pesticide tolerances for which related registered uses have been cancelled, EPA has recommended action levels to FDA to replace the existing tolerances and EPA has made recommendations to the FDA and the U.S. Department of Agriculture regarding existing action levels for commodities bearing residues for which tolerances have not been established. Among the pesticides for which EPA has revoked tolerances are: (i) DDT (51 Fed. Reg. 4668 (1986)); (ii) TDE (id.); (iii) DDE (id.); (iv) Aldrin (51 Fed. Reg. 4662 (1986); (v) Dieldrin (id.); and (vi) Chlordane (51 Fed. Reg. 4665).)

purposes of the final response action for the RMA Off-Post Operable Unit in accordance with the EPA regulations adopted pursuant to 42 U.S.C. § 9651(f) (which provides that the NCP is to be amended by December 11, 1988, to provide procedures for the protection of the health and safety of employees involved in response actions) and the provisions of the OSHA interim final rule at Fed. Reg. 45654 (1986) (as this may be subsequently finalized).

QQQBLET.Tbi

December 1988

POTENTIAL CHEMICAL-SPECIFIC ARARS FOR

THE ENDANGERMENT ASSESSMENT FOR THE

OFF-POST OPERABLE UNIT, RMA

## POTENTIAL CHEMICAL-SPECIFIC ARARS FOR THE ENDANGERMENT ASSESSMENT FOR THE OFF-POST OPERABLE UNIT ROCKY MOUNTAIN ARSENAL

1. PRIMARY NAME: Acetone (Dimethyl ketone)

CERCLA Hazardous Substance: Yes Ranking on ATSDR Priority List: No

Air Analyte: No

Potential Air ARAR: No

Ground Water RI Analyte: No

Potential Ground Water ARAR:

Soil RI Analyte: No Soil EA Analyte: No Potential Soil ARAR:

Surface Water RI Analyte: No

Potential Surface Water ARAR:

Biota RI Analyte: No Potential Biota ARAR: No

2. PRIMARY NAME: Aldrin

CERCLA Hazardous Substance: Yes

Ranking on ATSDR Priority List: Priority Group 1

Air Analyte: Yes Potential Air ARAR: No

Ground Water RI Analyte: Yes

Potential Ground Water ARAR: 40 C.F.R. § 129.100(a)(3) (a)

(TPES) -- 0.003  $\mu$ g/1; 45 Fed. Reg. 79325 (1980) (b) (AWQC) -- 0.74 ng/l $(10^{-5})$ , 0.074 ng/1  $(10^{-6})$ ,

0.0074 ng/l (10<sup>-7</sup>) (Human

Health).

Soil RI Analyte: Yes Soil EA Analyte: Yes Potential Soil ARAR: No

Surface Water RI Analyte: Yes

Potential Surface Water ARAR: (a)

40 C.F.R. § 129.100(a)(3) (TPES) -- 0.003  $\mu$ g/1;

45 Fed. Reg. 79325 (1980) (b) (AWQC) -- 0.74 ng/1 $(10^{-3})$ , 0.074 ng/l  $(10^{-6})$ , 0.0074 ng/l (10') (Human

Health); 45 Fed. Reg. 79325 (1980)

(AWQC) -- 3  $\mu$ g/l (Aquatic

Life).

3. PRIMARY NAME: Arsenic

CERCLA Hazardous Substance: Yes

Ranking on ATSDR Priority List: Priority Group 1

Air Analyte: Yes

Potential Air ARAR: (a) 40 C.F.R. § 61.162(a)(1) (NESHAP)

-- uncontrolled total arsenic
emissions from existing glass
melting furnaces shall be less than

2.5 Mg per year;
(b) 40 C.F.R. § 61.162(b)(1) (NESHAP)
-- uncontrolled total arsenic
emissions from new or modified
glass melting furnaces shall be
less than 0.4 Mg per year.

Ground Water RI Analyte: Yes Potential Ground Water ARAR:

- (a) 40 C.F.R. § 141.11(b) (NPDW -- MCL) -- 50  $\mu$ g/1;
- (b) 40 C.F.R. § 264.94(a)(2) (RCRA) -- 50  $\mu$ g/l;
- (c) 45 Fed. Reg. 79325-79326
   (1980) (AWQC) -- 22 ng/1
   (10<sup>-5</sup>), 2.2 ng/1 (10<sup>-6</sup>),
   0.22 ng/1 (10<sup>-7</sup>) (Human
  Health).

Soil RI Analyte: Yes
Soil EA Analyte: Yes
Potential Soil ARAR: No
Surface Water RI Analyte: Yes
Potential Surface Water ARAR: (a)

- (a) 40 C.F.R. § 141.11(b) (NPDW -- MCL) -- 50  $\mu$ g/l;
- (b) 40 C.F.R. § 264.94(a) (2) (RCRA) -- 50 μg/l;
- (c) 45 Fed. Reg. 79325-79326 (1980) (AWQC) -- 22 ng/l (10.5), 2.2 ng/l (10.6), 0.22 ng/l (10.7) (Human Health);
- (d) 45 Fed. Reg. 79325 (1980) (AWQC) -- 440 μg/l (Aquatic Life).

4. <u>PRIMARY NAME</u>: Arsenic chloride (AT) CERCLA Hazardous Substance: Yes

Ranking on ATSDR Priority List: No'

Air Analyte: Yes (Arsenic)

Potential Air ARAR: (a) 40 C.F.R. § 61.162(a)(1) (NESHAP)
(Arsenic) -- uncontrolled total
arsenic emissions from existing
glass melting furnaces shall be
less than 2.5 Mg per year;

(b) 40 C.F.R. § 61.162(b)(1) (NESHAP)
(Arsenic) -- uncontrolled total
arsenic emissions from new or
modified glass melting furnaces
shall be less than 0.4 Mg per year.

Ground Water RI Analyte: Yes (Arsenic)

Potential Ground Water ARAR: (a) (Arsenic) 40 C.F.R. § 141.11(b) (NPDW -- MCL) -- 50  $\mu$ g/l;

(b) (Arsenic) 40 C.F.R. § 264.94(a)(2) (RCRA) -- 50 μg/l;

(c) (Arsenic) 45 Fed. Reg. 79325-79326 (1980) (AWQC) -- 22 ng/l (10<sup>-5</sup>), 2.2 ng/l (10<sup>-6</sup>), 0.22 ng/l (10<sup>-7</sup>) (Human Health).

Soil RI Analyte: Yes (Arsenic) Soil EA Analyte: Yes (Arsenic)

Potential Soil ARAR: No

Surface Water RI Analyte: Yes (Arsenic)

Potential Surface Water ARAR: (a) (Arsenic) 40 C.F.R. § 141.11(b) (NPDW --MCL) -- 50  $\mu$ g/l;

(b) (Arsenic) 40 C.F.R. § 264.94(a)(2) (RCRA) -- 50 μg/l;

(c) (Arsenic) 45 Fed. Reg. 79325-79326 (1980) (AWQC) -- 22 ng/l (10<sup>-5</sup>), 2.2 ng/l (10<sup>-6</sup>), 0.22 ng/l (10<sup>-7</sup>) (Human Health);

(d) (Arsenic) 45 Fed. Reg.
79325 (1980) (AWQC) -440 μg/l (Aquatic Life).

5. PRIMARY NAME: Arsenic trioxide (ATO)
CERCLA Hazardous Substance: Yes
Ranking on ATSDR Priority List: No
Air Analyte: Yes (Arsenic)
Potential Air ARAR: (a) (Arsenic) 40 C.F.R. § 61.162(a)(1)

(Arsenic) 40 C.F.R. § 61.162(a)(1) (NESHAP) -- uncontrolled total arsenic emissions from existing glass melting furnaces shall be less than 2.5 Mg per year;

(b) (Arsenic) 40 C.F.R. § 61.162(b)(1)
(NESHAP) -- uncontrolled total
arsenic emissions from new or
modified glass melting furnaces
shall be less than 0.4 Mg per year.

Ground Water RI Analyte: Yes (Arsenic)

Potential Ground Water ARAR: (a) (Arsenic) 40 C.F.R. §
141.11(b) (NPDW -- MCL)
-- 50 µg/l;

(b) (Arsenic) 40 C.F.R. § 264.94(a)(2) (RCRA) -- 50 μg/l;

(c) (Arsenic) 45 Fed. Reg. 79325-79326 (1980) (AWQC) -- 22 ng/l (10<sup>-5</sup>), 2.2 ng/l (10<sup>-7</sup>) (Human Health);

Soil RI Analyte: Yes (Arsenic) Soil EA Analyte: Yes (Arsenic)

Potential Soil ARAR: No

Surface Water RI Analyte: Yes (Arsenic)

Potential Surface Water ARAR: (a) (Arsenic) 40 C.F.R. § 141.11(b) (NPDW -- MCL) -- 50 µg/l;

(b) (Arsenic) 40 C.F.R. § 264.94(a)(2) (RCRA) -- 50 μg/l;

(c) (Arsenic) 45 Fed. Reg. 79325-79326 (1980) (AWQC) -- 22 ng/l (10<sup>-5</sup>), 2.2 ng/l (10<sup>-6</sup>), 0.22 ng/l (10<sup>-7</sup>) (Human Health);

(d) (Arsenic) 45 Fed. Reg. 79325 (1980) (AWQC) --440 µg/l (Aquatic Life).

PRIMARY NAME: Benzene

CERCLA Hazardous Substance: Yes

Ranking on ATSDR Priority List: Priority Group 1

Air Analyte: Yes

Potential Air ARAR: No

Ground Water RI Analyte: No

Potential Ground Water ARAR: (a) 40 C.F.R. § 141.61(a), 52 Fed. Reg. 25716 (1987) (effective Jan. 9, 1989)

(NPDW -- MCL) -- 5  $\mu$ g/l; (b) 45 Fed. Reg. 79326 (1980) (AWQC) -- 6.6  $\mu$ g/l (10<sup>-5</sup>), 0.66 (10<sup>-6</sup>), 0.066 (10<sup>-7</sup>) (Human Health).

Soil RI Analyte: Yes Soil EA Analyte: Yes Potential Soil ARAR: No Surface Water RI Analyte: Yes

Potential Surface Water ARAR: (a) 40 C.F.R. §141.61(a); 52 Fed. Reg. 25716 (1987) (effective Jan. 9, 1989) (NPDW -- MCL) -- 5 µg/l;

(b) 45 Fed. Rag. 79326 (1980) (AWQC) -- 6.6  $\mu$ g/l (10<sup>-5</sup>), 0.66 (10<sup>-6</sup>), 0.066 (10<sup>-7</sup>) (Human Health);

(c) 45 Fed. Reg. 79326 (1980) -- 5,300 μg/l (Aquatic Life).

PRIMARY NAME: Cadmium 7.

CERCLA Hazardous Substance: Yes

Ranking on ATSDR Priority List: Priority Group 1

Air Analyte: Yes

Potential Air ARAR: No

Ground Water RI Analyte: Yes

Potential Ground Water ARAR:

- 40 C.F.R. § 141.11(b) (a) (NPDW -- MCL) -- 10  $\mu$ g/1;
  - 40 C.F.R. § 264.94(a)(2) (b)
  - (RCRA) -- 10  $\mu$ g/l; 45 Fed. Reg. 79327 (1980) (C) (AWQC) -- 10  $\mu$ g/l (Human Health).

Soil RI Analyte: Yes Soil EA Analyte: Yes Potential Soil ARAR: No

Surface Water RI Analyte:

Potential Surface Water ARAR: (a)

- 40 C.F.R. § 141.11(b) (NPDW -- MCL) -- 10  $\mu$ g/l;
- 40 C.F.R. § 264.94(a)(2) (b)  $(RCRA) -- 10 \mu g/1;$
- 45 Fed. Reg. 79327 (1980) (c) (AWQC) -- 10  $\mu$ g/l (Human Health);
- (d) 45 Fed. Reg. 70326-79327 (1980) (AWQC) -- 24 hour average to be determined e (1.05 [In(hardness)]-8.73), but not to exceed value of e (1.05 [In(hardness)]-3.73) at any one time (Aquatic Life).

Biota RI Analyte: No Potential Biota ARAR:

PRIMARY\_NAME: Calcium

CERCLA Hazardous Substance: No

Ranking on ATSDR Priority List: No

Air Analyte: No

Potential Air ARAR: No

Ground Water RI Analyte: Yes

Potential Ground Water ARAR: No

Soil RI Analyte: No Soil EA Analyte: No Potential Soil ARAR: No

Surface Water RI Analyte: Yes Potential Surface Water ARAR: No

Biota RI Analyte: No

Potential Biota ARAR:

9. PRIMARY NAME: Calcium bromate (Bromic acid, calcium salt)

CERCLA Hazardous Substance: No

Ranking on ATSDR Priority List: No

Air Analyte: No

Potential Air ARAR: No

Ground Water RI Analyte: Yes (Calcium)

Potential Ground Water ARAR: No

Soil RI Analyte: No Soil EA Analyte: No Potential Soil ARAR: No

Surface Water RI Analyte: Yes (Calcium)

Potential Surface Water ARAR: No

Biota RI Analyte: No Potential Biota ARAR: No

10. PRIMARY NAME: Calcium carbide CERCLA Hazardous Substance: Yes Ranking on ATSDR Priority List: No

Air Analyte: No

Potential Air ARAR: No

Ground Water RI Analyte: Yes (Calcium)

Potential Ground Water ARAR: No

Soil RI Analyte: No Soil EA Analyte: No Potential Soil ARAR:

Surface Water RI Analyte: Yes (Calcium)

Potential Surface Water ARAR: No

Biota RI Analyte: No Potential Plant ARAR: No

11 PRIMARY NAME: Calcium optomide CERCLA Hazardous Substance: No

Ranking on ATSDR Priority List: No

Air Analyte: No

Potential Air ARAR: No

Ground Water RI Analyte: Yes (Calcium)

Potential Ground Water ARAR: No

Soil RI Analyte: No Soil EA Analyte: No Potential Soil ARAR: No

Surface Water RI Analyte: Yes (Calcium)

Potential Surface Water ARAR: No

Carbon tetrachloride (Perchloromethane, 12. PRIMARY NAME: Tetrachloromethane)

CERCLA Hazardous Substance: Yes Ranking on ATSDR Priority List: Priority Group 2

Air Analyte: Yes

Potential Air ARAR: No

Ground Water RI Analyte: Yes

40 C.F.R. § 141.61(a), 42 Potential Ground Water ARAR: (a) Fed. Reg. 25716 (1987)

(effective Jan. 9, 1989)

(NPDW -- MCL) -- 5  $\mu$ g/l; 45 Fed. Reg. 79327 (1980) (AWQC) --  $4.0 \mu g/1$ ( $10^{-5}$ ),  $0.40 \mu g/1$  ( $10^{-6}$ ),  $0.04 \, \mu \text{g}/1 \, (10^{-7}) \, (\text{Human})$ Health).

Soil RI Analyte: Yes Soil EA Analyte: Yes Potential Soil ARAR: No

Surface Water RI Analyte:

40 C.F.R. § 141.61(a), 42 Potential Surface Water ARAR: (a) Fed. Reg. 25716 (1987)

(effective Jan. 9, 1989) (NPDW -- MCL) -- 5  $\mu$ g/1;

(b) 45 Fed. Reg. 79327 (1980) (AWQC) --  $4.0 \mu g/1$  $(10^{-5})$ , 0.40  $\mu$ g/l  $(10^{-6})$ , 0.04  $(10^{-7})$  (Human Health);

45 Fed. Reg. 79327 (1980) (c)  $(AWQC) -- 35,200 \mu g/1$ (Aquatic Life).

Biota RI Analyte: No Potential Biota ARAR:

13. PRIMARY NAME: Chloride

CERCLA Hazardous Substance: No

Ranking on ATSDR Priority List: No

Air Analyte: No

Potential Air ARAR: No

Ground Water RI Analyte: Yes

Potential Ground Water ARAR: No Soil RI Analyte: Yes

Soil EA Analyte: Yes

Potential Soil ARAR: No

Surface Water RI Analyte: Yes Potential Surface Water ARAR: No

14. PRIMARY NAME: Chlorinated phenol CERCLA Hazardous Substance: Yes Ranking on ATSDR Priority List:

Priority Group 4
(2,4,6Trichlorophenol and
2,4-Dichlorophenol)

Air Analyte: No

Potential Air ARAR: No

Ground Water RI Analyte: No

Potential Ground Water ARAR:

- (a) 2,4,5-trichlorophenol --45 Fed. Reg. 79329 (1980) (AWQC) -- 2600 µg/l (Human Health);
- (b) 2,4,6-trichlorophenol -- 45 Fed. Reg. 79329 (1980) (AWQC) -- 12  $\mu$ g/l (10<sup>-5</sup>), 1.2  $\mu$ g/l (10<sup>-6</sup>), 0.12  $\mu$ g/l (10<sup>-7</sup>) (Human Health);
- (c) Sufficient data was not available to derive AWQC toxicity levels for other compounds that would be protective of human health, 45 Fed. Reg. 79329 (1980).

Soil RI Analyte: No Soil EA Analyte: No Potential Soil ARAR: No Surface Water RI Analyte: No Potential Surface Water ARAR: (a)

- a) 2,4,5-trichlorophenol -45 Fed. Reg. 79329 (1980)
  (AWQC) -- 2600 μg/l
  (Human Health);
- (b) 2,4,6-trichlorophenol -- 45 Fed. Reg. 79329 (1980) (AWQC) -- 12  $\mu$ g/l (10<sup>-5</sup>), 1.2  $\mu$ g/l (10<sup>-6</sup>), 0.12  $\mu$ g/l (10<sup>-7</sup>) (Human Health);
- (c) Sufficient data was not available to derive AWQC toxicity levels for other compounds that would be protective of human health, 45 Fed. Reg. 79329 (1980);
- (d) 4-chloro-3-methyphenol,
   45 Fed. Reg. 79329 (1980)
   (AWQC) -- 30 μg/l
   (Aquatic Life);
- (e) 2,4,6-trichlorophenol, 45
  Fed. Reg. 79329 (1980)
   (AWQC) -- 970 μg/l
   (Aquatic Life);
- (f) Other chlorinated phenols, 45 Fed. Reg. 79329 (1980) (AWQC) -- 500,000 μg/l (Aquatic Life).

15. PRIMARY NAME: Chlorobenzene (Monochlorobenzene)

CERCLA Hazardous Substance: Yes

Ranking on ATSDR Priority List: Priority Group 3

Air Analyte: Yes

Potential Air ARAR: No

Ground Water RI Analyte: Yes

Potential Ground Water ARAR: 45 Fed. Reg. 79327-79328

(1980) (AWQC-

Monochlorobenzene) -- 488 μg/l

(Human Health)

Soil RI Analyte: Yes (Benzene) Soil EA Analyte: Yes (Benzene)

Potential Soil ARAR: No

Surface Water RI Analyte: Yes (Benzene)

Potential Surface Water ARAR: (a) 45 Fed. Reg. 79327-79328

(1980) (AWQC-

Monochlorobenzene) -- 488

 $\mu$ g/l (Human Health);

(b) 45 Fed. Reg. 79327 (1980)
 (AWQC) -- 50 μg/l (7.5
 days exposure) (Aquatic
 Life).

Biota RI Analyte: No

Potential Biota ARAR: No

16. PRIMARY NAME: Chloroform (Trichloromethane)

CERCLA Hazardous Substance: Yes

Ranking on ATSDR Priority List: Priority Group 1

Air Analyte: Yes

Potential Air ARAR: No

Ground Water RI Analyte: Yes

Potential Ground Water ARAR: (a) 40 C.F.R. § 141.12 (NPDW -- MCL) --  $100 \mu g/1$ (Note this is the total combined limit for this and all other trihalomethanes);

> 45 Fed. Reg. 79330 (1980) (b)  $(AWQC) -- 1.9 \mu g/1$  $(10^{-5})$ ,  $0.19 \mu g/1 (10^{-6})$ ,  $0.019 \mu g/1 (10^{-7})$  (Human Health).

Soil RI Analyte: Yes Soil EA Analyte: Yes Potential Soil ARAR: No

Surface Water RI Analyte: Yes

Potential Surface Water ARAR: (a)

40 C.F.R. § 141.12 (NPDW -- MCL) -- 100 μg/l (Note this is the total combined limit for this and all other trihalomethanes);

45 Fed. Reg. 79330 (1980) (AWQC) -- 1.9  $\mu$ g/l  $(10^{-5})$ , 0.19  $\mu$ g/1  $(10^{-6})$ , 0.019  $\mu$ g/l (10<sup>-7</sup>) (Human Health);

(C) 45 Fed. Reg. 79330 (1980)  $(AWQC) -- 1240 \mu g/1$ (Aquatic Life).

17. PRIMARY NAME: p-Chlorophenyl methyl sulfide (CPMS, PCPMS)

CERCLA Hazardous Substance: No

Ranking on ATSDR Priority List: No

Air Analyte: Yes

Potential Air ARAR: No

Ground Water RI Analyte: Yes Potential Ground Water ARAR: No

Soil RI Analyte: Yes Soil EA Analyte: Yes Potential Soil ARAR: No

Surface Water RI Analyte: Yes

Potential Surface Water ARAR: (2-Chlorophenol) 45 Fed. Reg.

79330 (1980) (AWQC) -- 4380

 $\mu$ g/l (Aquatic Life).

Biota RI Analyte: No Potential Biota ARAR: No

18. PRIMARY NAME: p-Chlorophenyl methyl sulfone (CPMSO<sub>2</sub>,

PCPMSO<sub>2</sub>)

CERCLA Hazardous Substance: No Ranking on ATSDR Priority List: No

Air Analyte: Yes

Potential Air ARAR: No

Ground Water RI Analyte: Yes Potential Ground Water ARAR: No

Soil RI Analyte: Yes Soil EA Analyte: Yes Potential Soil ARAR: No Surface Water PI Analyte

Surface Water RI Analyte: Yes

Potential Surface Water ARAR: (2-Chlorophenol) 45 Fed. Reg.

79330 (1980) (AWQC) -- 4380

μg/l (Aquatic Life).

p-Chlorophenyl methyl sulfoxide (CPMSO, 19. PRIMARY NAME: PCPMSO)

CERCLA Hazardous Substance: No Ranking on ATSDR Priority List:

Air Analyte: Yes

Potential Air ARAR: No

Ground Water RI Analyte: Yes Potential Ground Water ARAR: No

Soil RI Analyte: Yes Soil EA Analyte: Yes Potential Soil ARAR: No

Surface Water RI Analyte: Yes

Potential Surface Water ARAR: (2-Chlorophenol) 45 Fed. Reg. 79330 (1980) (AWQC) -- 4380

 $\mu g/l$  (Aquatic Life).

Biota RI Analyte: No Potential Biota ARAR: No

20. PRIMARY NAME: Chromium

CERCLA Hazardous Substance: Yes

Ranking on ATSDR Priority List: Priority Group 1

Air Analyte: Yes

Potential Air ARAR: No

Ground Water RI Analyte: Yes

40 C.F.R. § 141.11(b) Potential Ground Water ARAR: (a) (NPDW -- MCL) -- 50  $\mu$ g/l;

40 C.F.R. § 264.94(a)(2) (RCRA) -- 50  $\mu$ g/l.

Soil RI Analyte: Yes Soil EA Analyte: Yes Potential Soil ARAR: No

Surface Water RI Analyte: Yes

40 C.F.R. § 141.11(b) Potential Surface Water ARAR: (a)

(NPDW -- MCL) -- 50  $\mu$ g/1;

(b) 40 C.F.R. § 264.94(a)(2) (RCRA) -- 50  $\mu$ g/l.

21. PRIMARY NAME: Chromium III CERCLA Hazardous Substance: Yes Ranking on ATSDR Priority List: No Air Analyte: Yes (Chromium) Potential Air ARAR: No Ground Water RI Analyte: Yes (Chromium) Potential Ground Water ARAR: 45 Fed. Reg. 79331 (1980) (AWQC) -- 0.170  $\mu$ g/l (Human Health) Soil RI Analyte: Yes (Chromium) Soil EA Analyte: Yes (Chromium) Potential Soil ARAR: No Surface Water RI Analyte: Yes (Chromium) Potential Surface Water ARAR: (a) 45 Fed. Reg. 79331 (1980)  $(AWQC) -- 0.170 \mu g/1$ (Human Health); (b) 45 Fed. Reg. 79331 (1980) (AWQC) -- to be determined by e (1.08 [In(hard ness) ] + 3.48) (Aquatic Life. Biota RI Analyte: No Potential Biota ARAR: No 22. PRIMARY NAME: Chromium VI CERCLA Hazardous Substance: Yes Ranking on ATSDR Priority List: No Air Analyte: Yes (Chromium) Potential Air ARAR: No Ground Water RI Analyte: Yes (Chromium) 45 Fed. Reg. 79331 (1980) Potential Ground Water ARAR: (AWQC) -- 50  $\mu$ g/l (Human Health) Soil RI Analyte: Yes (Chromium) Soil EA Analyte: Yes (Chromium) Potential Soil ARAR: No Surface Water RI Analyte: Yes (Chromium) Potential Surface Water ARAR: (a) 45 Fed. Reg. 79331 (1980) (AWQC) -- 50  $\mu$ g/l (Human Health); (b) 45 Fed. Reg. 79331 (1980)

Biota RI Analyte: No Potential Biota ARAR: No (AWQC) -- 24 hour average

to be determined by e (1.08 [In(hard - ness)] + 3.48) (Aquatic

Life.

23. PRIMARY NAME: Copper

CERCLA Hazardous Substance: Yes

Ranking on ATSDR Priority List: Priority Group 3

Air Analyte: Yes

Potential Air ARAR: No

Ground Water RI Analyte: Yes

Potential Ground Water ARAR:

21 C.F.R. § 193.90 (TPFA) -tolerance of 1 part per
million for potable water for
residues of copper resulting
from the use as algicides or
herbicides of basic copper
carbonate (molachite), copper
sulfate (see below), copper
monoethandime, and copper to
control aquatic plants in
reservoirs, lakes, ponds,
irrigation ditches and other
potential sources of potable
water.

Soil RI Analyte: Yes
Soil EA Analyte: Yes
Potential Soil ARAR: No
Surface Water RI Analyte: Yes
Potential Surface Water ARAR: (a)

21 C.F.R. § 193.90 (TPFA) -- tolerance of 1 part per million for potable water for residues of copper resulting from the use as algicides or herbicides of basic copper sulfate (and the other copper compounds cited in "Potential Ground Water ARAR" above) to control aquatic plants in reservoirs, lakes, ponds, irrigation ditches and other potential sources of potable water;

(b) 45 Fed. Reg. 79331 (1980) (AWQC) -- 24 hour average is 5.6 µg/l and concentration at any one time should not exceed e (0.94 [In(hardness)]-1.23) (Aquatic Life).

24. PRIMARY NAME: Copper sulfate CERCLA Hazardous Substance: Yes Ranking on ATSDR Priority List: No

> Air Analyte: Yes (Copper) Potential Air ARAR: No

Ground Water RI Analyte: Yes (Copper)

Potential Ground Water ARAR: 21 C.F.R. § 193.90 (TPFA) --

tolerance of 1 part per million for potable water for residues of copper resulting from the use as algicides or herbicides of basic copper carbonate (molachite), copper sulfate (see below), copper monoethandime, and copper to control aquatic plants in reservoirs, lakes, ponds, irrigation ditches and other potential sources of potable water.

Soil RI Analyte: Yes (Copper) Soil MA Analyte: Yes (Copper) Statial Soil ARAR: No Surface Water RI Analyte: Yes

Potential Surface Water ARAR: (a)

21 C.F.R. § 193.90 (TPFA) -- tolerance of 1 part per million for potable water for residues of copper resulting from the use as algicides or herbicides of basic copper sulfate (and the other copper compounds cited in "Potential Ground Water ARAR" above) to control aquatic plants in reservoirs, lakes, ponds, irrigation ditches and other potential sources of potable water;

(b) 45 Fed. Reg. 79331 (1980) (AWQC) -- 24 hour average is 5.6 μg/l and concentration at any one time should not exceed e (0.94 [In(hardness)]-1.23) (Aquatic Life).

PRIMARY NAME: DDE (p, p'-Dichlorodiphenylethene)

CERCLA Hazardous Substance: Yes

Ranking on ATSDR Priority List: Priority Group 2

Air Analyte: Yes

Potential Air ARAR: No

Ground Water RI Analyte: Yes

Potential Ground Water ARAR: 40 C.F.R. § 129.101(a)(3)

(TPES) -- 0.001  $\mu$ g/l

Soil RI Analyte: Yes Soil EA Analyte: Yes Potential Soil ARAR: No

Surface Water RI Analyte: Yes

Potential Surface Water ARAR: (a) 40 C.F.R. § 129.101(a)(3) (TPES) -- 0.001  $\mu$ g/l;

45 Fed. Reg. 79331 (1980) (b)  $(AWQC) -- 1,050 \mu g/1$ (Aquatic Life).

Biota RI Analyte: Yes Potential Biota ARAR: No

PRIMARY NAME: DDT (p,p'-Dichlorodipenyltrichloroethane) 26.

CERCLA Hazardous Substance: Yes

Ranking on ATSDR Priority List: Priority Group 2

Air Analyte: Yes

Potential Air ARAR: No

Ground Water RI Analyte: Yes

40 C.F.R. § 129.101(a)(3) Potential Ground Water ARAR: (a)

(TPES) -- 10  $\mu$ g/1;

45 Fed. Reg. 79332 (1980) (b) (AWQC) -- 0.24 ng/1 $(10^{-5})$ , 0.024 ng/l  $(10^{-6})$ , 0.0024 ng/l (10<sup>-7</sup>) (Human Health).

Soil RI Analyte: Yes Soil EA Analyte: Yes Potential Soil ARAR: No

Surface Water RI Analyte: Yes

Potential Surface Water ARAR: (a) 40 C.F.R. § 129.101(a)(3)

(TPES) -- 10  $\mu$ g/1;

45 Fed. Reg. 79332 (1980) (b) (AWQC) -- 0.24 ng/l $(10^{-5})$ , 0.024 ng/1  $(10^{-5})$ , 0.0024 ng/l (10<sup>-7</sup>) (Human Health);

45 Fed. Reg. 79331 (1980) (AWQC) -- 24 hour average is 0.0010  $\mu$ g/l and 1.1  $\mu g/l$  at any one time (Aquatic Life).

27. PRIMARY NAME: 1,2-Dibromo-3-chlo-opropane (DBCP, Nemagon,

Dibromochloropropana)

CERCLA Hazardous Substance: Yes Ranking on ATSDR Priority List: No

Air Analyte: Yes

Potential Air ARAR: No

Ground Water RI Analyte: Yes Potential Ground Water ARAR: No

Soil RI Analyte: Yes Soil EA Analyte: Yes Potential Soil ARAR: No

Surface Water RI Analyte: Yes Potential Surface Water ARAR: No

Biota RI Analyte: No

Potential Biota ARAR:

21 C.F.R. § 193.250(a) (TPFA) -When food additive is present as a
result of fumigation in addition to
the authorized use of this
nematocide, the total residues of
inorganic bromides shall not exceed
the following: (i) 400 parts per
million in or on dried eggs and
processed herbs and spices;...(iii)
250 parts per million in or on
concentrated tomato products and
dried figs; and (iv) 125 parts per
million in or on processed foods
other than those listed above.

PRIMARY NAME: p-Dichlorobenzene (1,4-Dichlorobenzene) 28. CERCLA Hazardous Substance: Yes

Ranking on ATSDR Priority List: Priority Group 1

Air Analyte: No

Potential Air ARAR: No

Ground Water RI Analyte: No

Potential Ground Water ARAR:

- 40 C.F.R. § 141.50(b) (a) (NPDW -- MCLG) -- 750  $\mu g/1$ :
  - (b) 45 Fed. Reg. 79332 (1980) (AWQC) -- 400  $\mu$ g/l (Human Health)

Soil RI Analyte: Soil F. Analyte: No

Fotential Soil ARAR: No

Surface Water RI Analyte: No

- 40 C.F.R. § 141.50(b) rotential Surface Water ARAR: (a) (NPDW -- MCLG) -- 750 μg/1;
  - (b) 45 Fed. Reg. 79332 (1980) (AWQC) -- 400  $\mu$ g/l (Human Health);
  - .c; 45 Fed. Reg. 79332 (1980)  $(AWQC) -- 763 \mu g/1$ (Aquatic Life).

Flots Fi Analytes No Potential Blota ARAPE No 29. <u>PRIMARY NAME</u>: 1,1-Dichloroethane CERCLA Hazardous Substance: Yes

Ranking on ATSDR Priority List: Priority Group 3

Air Analyte: Yes

Potential Air ARAR: No

Ground Water RI Analyte: Yes Potential Ground Water ARAR: No

Soil RI Analyte: Yes Soil EA Analyte: Yes Potential Soil ARAR: No

Surface Water RI Analyte: Yes Potential Surface Water ARAR: No

Biota RI Analyte: No Potential Siota ARAR: No

30. <u>PRIMARY NAME</u>: 1,2-Dichloroethane CERCLA Hazardous Substance: Yes

Ranking on ATSDR Priority List: Priority Group 2

Air Analyte: Yes Potential Air ARAR: No

Ground Water RI Analyte: Yes

Potential Ground Water ARAR: 40 C.F.R. § 141.61(a) (NPDW --

MCL); 52 Fed. Reg. 25716 (1987) (effective Jan. 9, 1989) -- 5 μg/l

Soil RI Analyte: Yes Soil EA Analyte: Yes Potential Soil ARAR: No

Surface Water RI Analyte: Yes

Potential Surface Water ARAR: 40 C.F.R. § 141.61(a); 52 Fed.

Reg. 25716 (1987) (effective

Jan 9, 1989) -- 5  $\mu$ g/1

31. PRIMARY NAME: 1,1-Dichloroethylene CERCLA Hazardous Substance: Yes Ranking on ATSDR Priority List: No

Air Analyte: No

Potential Air ARAR: No

Ground Water RI Analyte: Yes

Potential Ground Water ARAR: (a)

40 C.F.R. § 141.61(a), 52 Fed. Reg. 25716 (1987) (effective Jan. 9, 1989) (NPDW -- MCL) -- 7  $\mu$ g/1;

40 C.F.R. § 141.50(b) (NPDW -- MCLG) -- 7  $\mu$ g/1;

45 Fed. Reg. 79332 (1980)  $(AWQC) -- 0.33 \mu g/1$  $(10^{-5})$ , 0.033  $\mu$ g/1  $(10^{-6})$ , 0.0033  $\mu$ g/l (10<sup>7</sup>) (Human Health).

Soil RI Analyte: Yes Soil EA Analyte: Yes Potential Soil ARAR: No Surface Water RI Analyte: No Potential Surface Water ARAR: (a)

40 C.F.R. § 141.61(a), 52 Fed. Reg. 25716 (1987) (effective Jan 9, 1989) (NPDW -- MCL) --  $7 \mu g/1$ :

40 C.F.R. § 141.50(b) (b) (NPDW -- MCLG) -- 7  $\mu$ g/1;

45 Fed. Reg. 79332 (1980) (AWQC) -- 0.33  $\mu$ g/l (10<sup>-5</sup>), 0.033  $\mu$ g/l (10<sup>-6</sup>), 0.0033  $\mu$ g/l (10<sup>-7</sup>) (Human Health);

45 Fed. Reg. 79332 (1980) (d)  $(AWQC) -- 11,600 \mu g/1$ (Aquatic Life).

32. PRIMARY NAME: 1,2-Dichloroethylene CERCLA Hazardous Substance: No Ranking on ATSDR Priority List: No

Air Analyte: Yes Potential Air ARAR: No

Ground Water RI Analyte: Yes

Potential Ground Water ARAR: (a) 40 C.F.R. § 141.61(a), 52 Fed. Reg. 25716 (1987) (effective Jan 9, 1989) (NPDW -- MCL) -- 7 µg/1;

(b) 45 Fed. Reg. 79332 (1980) (AWQC) -- 0.33  $\mu$ g/1  $(10^{-5})$ , 0.033  $\mu$ g/1  $(10^{-6})$ , 0.0033  $\mu$ g/l (10<sup>-7</sup>) (Human Health);

Soil RI Analyte: Yes Soil EA Analyte: Yes Potential Soil ARAR: No Surface Water RI Analyte: No

Potential Surface Water ARAR: (a) 40 C.F.R. § 141.61(a), 52 Fed. Reg. 25716 (1987)

(effective Jan 9, 1989) (NPDW -- MCL) -- 7 µg/1;

**45 Fed.** Reg. 79332 (1980) (b) (AWQC) -- 0.33  $\mu$ g/1  $(10^3)$ , 0.033  $\mu g / 1$   $(10^6)$ ,  $0.0033 \, \mu g/1 \, (10^{-7})$  (Human Health);

45 Fed. Reg. 79332 (1980) (c)  $(AWQC) -- 11,600 \mu g/1$ (Aquatic Life).

Biota RI Analyte: No Potential Biota ARAR:

PRIMARY NAME: Dicyclopentadiene (DCPD) CERCLA Hazardous Substance: No Ranking on ATSDR Priority List: Air Analyte: Yes Potential Air ARAR: No Ground Water RI Analyte: Yes Potential Ground Water ARAR: No Soil RI Analyte: Yes Soil EA Analyte: Yes Potential Soil ARAR: Surface Water RI Analyte: Yes Potential Surface Water ARAR: No Biota RI Analyte: No Potential Biota ARAR:

34. PRIMARY NAME: Dieldrin

CERCLA Hazardous Substance: Yes

Ranking on ATSDR Priority List: Priority Group 1

Air Analyte: Yes

Potential Air ARAR: No

Ground Water RI Analyte: Yes

40 C.F.R. § 129.100(a)(3) Potential Ground Water ARAR: (a)

(TPES) -- 0.12  $\mu$ g/1; 45 Fed. Reg. 79325 (1980) (b) (AWQC) -- 0.71 ng/1 (10<sup>5</sup>), 0.071 ng/1 (10<sup>6</sup>),  $0.0071 \text{ ng/l} (10^{-7}) \text{ (Human)}$ Health).

Soil RI Analyte: Yes Soil EA Analyte: Potential Soil ARAR: No

Surface Water RI Analyte:

Potential Surface Water ARAR: (a)

40 C.F.R. § 129.100(a)(3) (TPES) -- 0.12  $\mu$ g/1;

(b) 45 Fed. Reg. 79325 (1980) (AWQC) -- 0.71 ng/l $(10^{-5})$ , 0.071 ng/1  $(10^{-6})$ ,  $0.0071 \text{ ng/l} (10^{-7}) \text{ (Human)}$ Health);

**45 Fed. Reg. 79325 (1980)** (c) (AWQC) -- 24 hour average 0.0019  $\mu g/1$  and concentration of 2.5 µg/l at any one time (Aquatic Life).

Biota RI Analyte: Yes Potential Biota ARAR: No 35. PRIMARY NAME: Diisopropyl methyl phosphonate (DIMP, Diisopropylmethylphosphonate)

CERCLA Hazardous Substance: No Ranking on ATSDR Priority List: No

Air Analyte: Yes

Potential Air ARAR: No

Ground Water RI Analyte: Yes Potential Ground Water ARAR: No Soil RI Analyte: Yes

Soil EA Analyte: Yes Potential Soil ARAR: No

Surface Water RI Analyte: Yes Potential Surface Water ARAR: No

Biota RI Analyte: No Potential Biota ARAR: No

36. PRIMARY NAME: 1,4-Dithiane (DITH) CERCLA Hazardous Substance: No Ranking on ATSDR Priority List: No Air Analyte: Yes Potential Air ARAR: No Ground Water RI Analyte: Yes Potential Ground Water ARAR: No Soil RI Analyte: Yes Soil EA Analyte: Yes Potential Soil ARAR: No Surface Water RI Analyte: Yes Potential Surface Water ARAR: No Biota RI Analyte: No

37. PRIMARY NAME: Endrin

CERCLA Hazardous Substance: Yes

Ranking on ATSDR Priority List: Priority Group 3

Air Analyte: Yes

Potential Air ARAR: No

Ground Water RI Analyte: Yes

40 C.F.R. § 141.12 (NPDW Potential Ground Water ARAR: (a) -- MCL) -- 0.2  $\mu$ g/1;

- (b) 40 C.F.R. § 264.94(a)(2) (RCRA) -- 0.2  $\mu$ g/l;
- 45 Fed. Reg. 79334 (1980) (c) (AWQC) -- 1  $\mu$ g/l (Human Health).

Soil RI Analyte: Yes Soil EA Analyte: Yes Potential Soil ARAR: No Surface Water RI Analyte: Yes Potential Surface Water ARAR: (a)

- 40 C.F.R. § 141.12 (NPDW -- MCL) -- 0.2  $\mu$ g/l;
  - 40 C.F.R. § 264.94(a)(2) (b)
  - (RCRA) -- 0.2  $\mu$ g/1; 45 Fed. Reg. 79334 (1980) (C) (AWQC) -- 1  $\mu$ g/l (Human Health);
  - (d) 45 Fed. Reg. 79334 (1980) (AWQC) -- 24 hour average 0.0023  $\mu$ g/1 and concentration not to exceed 0.18  $\mu$ g/l at any time (Aquatic Life).

Biota RI Analyte: Yes Potential Biota ARAR:

40 C.F.R. § 180.131 (TPCRAC) -zero parts per million tolerances for residues in sugarbeets, sugarbeet tops, broccoli, brussels sprouts, cabbage, cauliflower, cottonseed, cucumbers, eggplant, peppers, potatoes, summer squash and tomatoes.

PRIMARY NAME: Ethyl benzene (Ethylbenzene) 38.

CERCLA Hazardous Substance: Yes

Ranking on ATSDR Priority List: Priority Group 4

Air Analyte: Yes

Potential Air ARAR:

Ground Water RI Analyte: Yes

Potential Ground Water ARAR: 45 Fed. Reg. 79334 (1980)

(AWQC) -- 1400  $\mu$ g/l

Soil RI Analyte: Yes Soil EA Analyte: Yes Potential Soil ARAR: No

Surface Water RI Analyte: Yes

Potential Surface Water ARAR: (a) 45 Fed. Reg. 79334 (1980) (AWQC) -- 1400  $\mu$ g/l;

45 Fed. Reg. 79334 (1980) (b)  $(AWQC) -- 32,000 \mu g/1$ (Aquatic Life).

Biota RI Analyte: No Potential Biota ARAR: No

PRIMARY NAME: Fluoride

CERCLA Hazardous Substance: No

Ranking on ATSDR Priority List: No

Air Analyte: No

Potential Air ARAR: No

Ground Water RI Analyte: Yes

Potential Ground Water ARAR: (a)

40 C.F.R. § 141.11(c) (NPDW -- MCL) -- 4000  $\mu g/l$ ;

40 C.F.R. § 141.62(b) (b) (NPDW -- MCL) -- 4000  $\mu g/1$ :

40 C.F.R. § 141.50(b) (C) (NPDW -- MCLG) -- 4000  $\mu g/1.$ 

Soil RI Analyte: Yes Soil EA Analyte: Yes Potential Soil ARAR: No Surface Water RI Analyte: No

40 C.F.R. § 141.11(c) Potential Surface Water ARAR: (a) (NPDW -- MCL) -- 4000 μg/l:

40 C.F.R. § 141.62(b) (b) (NPDW -- MCL) -- 4000  $\mu g/1$ :

(C) 40 C.F.R. § 141.50(b) (NPDW -- MCLG) -- 4000  $\mu g/l$ .

Biota RI Analyte: No Potential Biota ARAR: No 40. PRIMARY NAME: Isodrin
CERCLA Hazardous Substance: No
Ranking on ATSDR Priority List: No
Air Analyte: Yes
Potential Air ARAR: No
Ground Water RI Analyte: Yes
Potential Ground Water ARAR: No
Soil RI Analyte: Yes
Soil EA Analyte: Yes
Potential Soil ARAR: No
Surface Water RI Analyte: Yes
Potential Surface Water ARAR: No

Biota RI Analyte: No Potential Biota ARAR: No

41. <u>PRIMARY NAME</u>: Lead CERCLA Hazardous Substance: Yes

Ranking on ATSDR Priority List: Priority Group 1

Air Analyte: Yes

Potential Air ARAR: 40 C.F.R. § 50.12 (NAAQS) -- 1.5 micrograms per cubic meter, maximum arithmetic mean averaged over a calendar

quarter

Ground Water RI Analyte: Yes

Potential Ground Water ARAR: (a) 40 C.F.R. § 141.11(b) (NPDW -- MCL) -- 50  $\mu$ g/l;

(b) 40 C.F.R. § 264.94(a)(2) (RCRA) -- 50 μg/l;

(c) 45 Fed. Reg. 79336 (1980) (AWQC) -- 50  $\mu$ g/l (Human Health).

Soil RI Analyte: Yes Soil EA Analyte: Yes Potential Soil ARAR: No

Surface Water RI Analyte: Yes

Potential Surface Water ARAR: (a)

) 40 C.F.R. § 141.11(b) (NPDW -- MCL) -- 50 μg/1; 1 40 C.F.R. § 264.94(a)(2)

(b) 40 C.F.R. § 264.94(a)(2) (RCRA) -- 50 μg/1;

(c) 45 Fed. Reg. 79336 (1980)
 (AWQC) -- 50 μg/l (Human
Health);

(d) 45 Fed. Reg. 79336 (1980)
 (AWQC) -- 24 hour limit
 to not exceed
 e (2.35 [In(hardness)] 9.48) and concentration
 at any one time to not
 exceed
 e (1.22 [In(hardness)] 0.47] (Aquatic Life).

Biota RI Analyte: No Potential Biota APAR: No 42. PRIMARY NAME: Magnesium CERCLA Hazardous Substance: No Ranking on ATSDR Priority List: No Air Analyte: No Potential Air ARAR: No Ground Water RI Analyte: Yes Potential Ground Water ARAR: No Soil RI Analyte: No Soil EA Analyte: No Potential Soil ARAR: No Surface Water RI Analyte: No Potential Surface Water ARAR: Biota RI Analyte: No Potential Biota ARAR: No

43. PRIMARY NAME: Magnesium hydroxide
CERCLA Hazardous Substance: No
Ranking on ATSDR Priority List: No
Air Analyte: No
Potential Air ARAR: No
Ground Water RI Analyte: Yes (Magnesium)
Potential Ground Water ARAR: No
Soil RI Analyte: No
Soil EA Analyte: No
Potential Soil ARAR: No
Surface Water RI Analyte: No
Potential Surface Water ARAR: No
Biota RI Analyte: No
Potential Biota ARAR: No

44. PRIMARY NAME: Mercuric chloride CERCLA Hazardous Substance: Yes Ranking on ATSDR Priority List: No Air Analyte: Yes (Mercury)

Air Analyte: Yes (Mercury)
Potential Air ARAR: No

Ground Water RI Analyte: Yes (Mercury)

Potential Ground Water ARAR: (a) (Mercury) 40 C.F.R. §
141.11(b) (NPDW -- MCL)
-- 2 µg/l;

(b) (Mercury) 45 Fed. Reg. 79336-79337 (1980) (AWQC) -- 144 ng/l (Human Health).

Soil RI Analyte: Yes (Mercury) Soil EA Analyte: Yes (Mercury)

Potential Soil ARAR: No

Surface Water RI Analyte: Yes (Mercury)

Potential Surface Water ARAR: (a) (Mercury) 40 C.F.R. § 141.11(b) (NPDW -- MCL) -- 2 \mu g/1;

(b) (Mercury) 45 Fed. Reg. 79336-79337 (1980) (AWQC) -- 144 ng/l (Human Health);

(c) (Mercury) 45 Fed. Reg. 79336 (1980) (AWQC) --0.00057 μg/l (as a 24hour average and the concentration should not exceed 0.0017 μg/l at any one time) (Aquatic Life).

Biota RI Analyte: No Potential Biota ARAR: No

45. PRIMARY NAME: Mercury

CERCLA Hazardous Substance: Yes

Ranking on ATSDR Priority List: Priority Group 2

Air Analyte: Yes

Potential Air ARAR: (a) 40 C.F.R. § 61.52(a) (NESHAP) -emissions to atmosphere from
mercury ore processing facilities
not to exceed 2300 grams per 24hour period;

(b) 40 C.F.R. § 61.52(b) (NESHAP) -emissions to atmosphere from sludge
incineration or drying plants not
to exceed 3200 grams per 24-hour
period.

Ground Water RI Analyte: Yes Potential Ground Water ARAR:

(a) 40 C.F.R. § 141.11(b) (NPDW -- MCL) -- 2 μg/l;

(b) 40 C.F.R. § 264.94(a)(2)
 (RCRA) -- 2 μg/l;
 (c) 45 Fed. Reg. 79536-79337

(c) 45 Fed. Reg. 79536-79337 (1980) (AWQC) -- 144 ng/l (Human Health).

Soil RI Analyte: Yes
Soil EA Analyte: Yes
Potential Soil ARAR: No
Surface Water RI Analyte: Yes
Potential Surface Water ARAR: (a)

1) 40 C.F.R. § 141.11(b) (NPDW -- MCL) -- 2 \mu g/l;

(b) 40 C.F.R. § 264.94(a)(2) (RCRA) -- 2  $\mu$ g/1;

(c) 45 Fed. Reg. 79336-79337
 (1980) (AWQC) -- 144 ng/l
 (Human Health);

(d) 45 Fed. Reg. 79336-79337 (1980) (AWQC) -- 24 hour average 0.00057  $\mu$ g/l and concentration not to exceed 0.0017  $\mu$ g/l at any one time (Aquatic Life).

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Biota RI Analyte: No Potential Biota ARAR: No 46. PRIMARY NAME: Nitrate

CERCLA Hazardous Substance: No Ranking on ATSDR Priority List: No

Air Analyte: No

Potential Air ARAR: No

Ground Water RI Analyte: Yes

Potential Ground Water ARAR: 40 C.F.R. § 141.11(b)

 $(NPDW--MCL) -- 10,000 \mu g/1$ 

Soil RI Analyte: No Soil EA Analyte: No Potential Soil ARAR: No

Surface Water RI Analyte: No

Potential Surface Water ARAR: 40 C.F.R. § 141.11(b)

 $(NPDW--MCL) -- 10,000 \mu g/1$ 

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Biota RI Analyte: No Potential Biota ARAR: No

47. PRIMARY NAME: Nitrite

CERCLA Hazardous Substance: No Ranking on ATSDR Priority List: No

Air Analyte: No

Potential Air ARAR: No Ground Water RI Analyte: No Potential Ground Water ARAR: N

Soil RI Analyte: No Soil EA Analyte: No Potential Soil ARAR: No Surface Water RI Analyte: No

Potential Surface Water ARAR: No

Biota RI Analyte: No Potential Biota ARAR: No

48. PRIMARY NAME: 1,4-Oxathiane (p-Thiozane)

CERCLA Hazardous Substance: No

Ranking on ATSDR Priority List: No

Air Analyte: Yes

Potential Air ARAR: No

Ground Water RI Analyte: Yes Potential Ground Water ARAR: No

Soil RI Analyte: Yes Soil EA Analyte: Yes Potential Soil ARAR: No

Surface Water RI Analyte: Yes Potential Surface Water ARAR: No

Biota RI Analyte: No Potential Biota ARAR:

49. PRIMARY NAME: Sodium
CERCLA Hazardous Substance: Yes
Ranking on ATSDR Priority List: No
Air Analyte: No
Potential Air ARAR: No
Ground Water RI Analyte: Yes
Potential Ground Water ARAR: No
Soil RI Analyte: No
Soil EA Analyte: No
Potential Soil ARAR: No
Surface Water RI Analyte: No
Potential Surface Water ARAR: No
Biota RI Analyte: No
Potential Biota ARAR: No

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50. PRIMARY NAME: Sodium bicarbonate, 1:1
CERCLA Hazardous Substance: No
Ranking on ATSDR Priority List: No
Air Analyte: No
Potential Air ARAR: No
Ground Water RI Analyte: Yes (Sodium)
Potential Ground Water ARAR: No
Soil RI Analyte: No
Soil EA Analyte: No
Potential Soil ARAR: No
Surface Water RI Analyte: No
Potential Surface Water ARAR: No
Biota RI Analyte: No
Potential Biota ARAR: No

51. PRIMARY NAME: Sodium bromate
CERCLA Hazardous Substance: No
Ranking on ATSDR Priority List: No
Air Analyte: No
Potential Air ARAR: No
Ground Water RI Analyte: Yes (Sodium)
Potential Ground Water ARAR: No
Soil RI Analyte: No
Soil EA Analyte: No
Potential Soil ARAR: No
Surface Water RI Analyte: No
Potential Surface Water ARAR: No
Biota RI Analyte: No
Potential Biota ARAR: No

52. PRIMAFY NAME: Sodium carbonate, 2:1
CERCLA Hazardous Substance: No
Ranking on ATSDR Priority List: No
Air Analyte: No
Potential Air ARAR: No
Ground Water RI Analyte: Yes (Sodium)
Potential Ground Water ARAR: No
Soil RI Analyte: No
Soil EA Analyte: No
Potential Soil ARAR: No
Surface Water RI Analyte: No
Potential Surface Water ARAR: No
Biota RI Analyte: No
Potential Biota ARAR: No

- 53. PRIMARY NAME: Sodium methylate, alcohol mixture CERCLA Hazardous Substance: Yes Ranking on ATSDR Priority List: No Air Analyte: No Potential Air ARAR: No Ground Water RI Analyte: Yes (Sodium) Potential Ground Water ARAR: No Soil RI Analyte: No Soil EA Analyte: No Potential Soil ARAR: No Surface Water RI Analyte: No Potential Surface Water ARAR: To Bicta RI Analyte: No Potential Biota ARAR: No
- 54. PPIMAPY NAME: Sodium nitrite CERCIA Hazardous Substance: Yes Ranking on ATSDR Priority List: No Air Analyte: No Potential Air ARAR: No Ground Water RI Analyte: Yes (Sedium) Potential Ground Water ARAR: No Soil RI Analyte: No Soil EA Analyte: Potential Soil APAR: Surface Water RI Analyte: Potential Surface Water ARAK: Biota RI Analyte: No Potential Bieth ARAF:

- 55. FRIMARY NAME: Sodium silicate
  CERCLA Hazardous Substance: No
  Ranking on ATSDR Priority List: No
  Air Analyte: No
  Potential Air ARAR: No
  Ground Water RI Analyte: Yes (Sodium)
  Potential Ground Water ARAR: No
  Soil RI Analyte: No
  Soil EA Analyte: No
  Potential Soil ARAR: No
  Surface Water RI Analyte: No
  Potential Surface Water ARAR: No
  Biota RI Analyte: No
  Potential Biota ARAR: No
- PPIMARY NAME: Sodium sulfite, 2:1 CERCLA Hazardous Substance: No Ranking on ATSDR Priority List: No Air Analyte: No Potential Air ARAR: No Ground Water RI Analyte: Yes (Sodium) Potential Ground Water ARAR: No Soil RI Analyte: No Soil EA Analyte: No Potential Soil ARAR: No Surface Water RI Analyte: No Potential Surface Water ARAR: No Biota RI Analyte: No Potential Blota ARAR:
- 57. PRIMARY NAME: Sodium sulfonate CERCIA Hazardous Substance: No Ranking on ATSDR Priority List: No Air Analyte: No Potential Air AFAR: No Ground Water RI Analyte: Yes (Sodium) Potential Ground Water ARAR: No Soil RI Analyte: No Soil EA Analyte: No Potential Soil ARAR: No Surface Water RI Analyte: No Surface Water RI Analyte: No Potential Surface Water RI Analyte: No Potential Surface Water AFAR. No Biota RI Analyte: No Potential Biota AFAR: No

58. PRIMARY NAME: Sodium thiosulfate (Hypo)
CERCLA Hazardous Substance: No
Ranking on ATSDR Priority List: No
Air Analyte: No
Potential Air ARAR: No
Ground Water RI Analyte: Yes (Sodium)
Potential Ground Water ARAR: No
Soil RI Analyte: No
Soil EA Analyte: No
Potential Soil ARAR: No
Surface Water RI Analyte: No
Potential Surface Water ARAR: No
Biota RI Analyte: No
Potential Biota ARAR: No

59. PRIMARY NAME: Sulfate
CERCLA Hazardous Substance: No
Ranking on ATSDR Priority List: No
Air Analyte: No
Potential Air ARAR: No
Ground Water RI Analyte: Yes
Potential Ground Water ARAR: No
Soil RI Analyte: Yes
Soil EA Analyte: No
Potential Soil ARAR: No
Surrace Water RI Analyte: Yes
Potential Surface Water ARAR: No
Biota RI Analyte: No
Potential Biota ARAR: No

60. PRIMARY NAME: Sulfonic acid CERCIA Hazardous Substance: No Ranking on ATSDR Priority List: No Air Analyte: No Potential Air ARAR: No Ground Water RI Analyte: No Potential Ground Water ARAR: No Soil RI Analyte: No Soil EA Analyte: No Potential Soil APAR: No Surface Water RI Analyte: No Potential Jurface Water ARAR: No Biota RI Analyte: No Potential Biota ARAR: No

61. PRIMARY NAME: p,p'-TDE
CERCLA Hazardous Substance: Yes
Ranking on ATSDR Priority List: No
Air Analyte: No
Potential Air ARAR: No
Ground Water RI Analyte: No
Potential Ground Water ARAR: No
Soil RI Analyte: No
Soil EA Analyte: No
Potential Soil ARAR: No
Surface Water RI Analyte: No
Potential Surface Water ARAR: 45 Fed. Reg. 79331 (1980)

Biota RI Analyte: No Potential Biota ARAR: No

62. PRIMARY NAME: Tetrachlorobenzene (1,2,4,5Tetrachlorobenzene)
CERCLA Hazardous Substance: Yes
Ranking on ATSDR Priority List: No
Air Analyte: No
Potential Air ARAR: No
Ground Water RI Analyte: No
Potential Ground Water ARAR: 45 Fed. Reg. 79327 (1980)
(AWQC) -- 38 μg/l (Human Health)

Soil RI Analyte: No Soil EA Analyte: No Potential Soil ARAR: No Surface Water RI Analyte: No Potential Surface Water ARAR:

(a) 45 Fed. Reg. 79327 (1980) (AWQC) -- 38 ug/l (Human Health);

(AWQC) -- 0.6  $\mu$ g/l (Aquatic

Life).

(b) 45 Fed. Reg. 79327 (1980) (AWQC) -- 250 ug/l (Aquatic Life).

Biota RI Analyte: No Potential Biota ARAR: No

PRIMARY NAME: 1,1,2,2-Tetrachloroethane 63. CURCIA Hazardous Substance: Yes Ranking on ATSOR Priority List: No Air Analyte: No Potential Air AFAE: No Ground Water RI Analyte: Potential Ground Witer ANAR: No. No Soil RI Analyte: Soil DA Analyte: No Potential Soil AFAR: No Surface Water RI Analyte: No Potential Surface Water APAP: Biota RI Analyte: No Potential Biota AFAR:

64. PRIMARY NAME: 1,1,2,2-Tetrachloroethylene (Perchloroethylene, PCE)

CERCLA Hazardous Substance: Yes Ranking on ATSDR Priority List: No

Air Analyte: Yes Potential Air ARAR: No

Ground Water RI Analyte: Yes

Potential Ground Water ARAR: 45 Fed. Reg. 79341 (1980)  $(AWQC) -- 8 \mu g/1 (10^{-5}), 0.8$  $\mu g/1 (10^6)$ , 0.08  $\mu g/1 (10^7)$ 

(Human Health)

Soil RI Analyte: Yes Soil EA Analyte: Yes Potential Soil ARAR: No

Surface Water RI Analyte: Yes

Potential Surface Water ARAR: (a) 45 Fed. Reg. 79341 (1980) (AF 2) -- 8  $\mu$ g/l (10<sup>5</sup>), 0.  $\mu$ g/l (10<sup>6</sup>), 0.08  $\mu$ g/l (10<sup>7</sup>) (F man Health);

45 Fed. Reg. 79341 (1980)  $(AWQC) - 840 \mu g/1$ (Aquatic Life).

Biota RI Analyte: No Potential Biota ARAR: No

65. PRIMARY NAME: Toluene

CERCLA Hazardous Substance: Yes

Ranking on ATSDR Priority List: Priority Group 2

Air Analyte: Yes

Potential Air ARAR: 45 Fed. Reg. 79340 (1980) (AWQC) --14,300  $\mu$ g/l (Human Health)

Ground Water RI Analyte: Yes

Potential Ground Water ARAR: No

Soil RI Analyte: Yes Soil EA Analyte: Yes Potential Soil ARAR: No

Surface Water RI Analyte: Yes

Potential Surface Water ARAR: (a) 45 Fed. Reg. 79340 (1980)  $(AWQC) -- 14,300 \mu g/1$ (Human Health);

> 45 Fed. Reg. 79340 (1980)  $(ANQC) -- 17,500 \mu g/1$ (Aquatic Life).

Biota RI Analyte: No Potential Biota ARAR: 66. PRIMARY NAME: 1,1,1-Trichloroethane CERCLA Hazardous Substance: Yes

Ranking on ATSDR Priority List: Priority Group 3

Air Analyte: Yes

Potential Air ARAR: No

Ground Water RI Analyte: Yes

Potential Ground Water ARAR: 40 C.F.R. § 141.50 (NPDW (a)

-- MCLG) -- 200 μg/l; 40 C.F.R. § 141.61(a); 52 (b) Fed. Reg. 25716 (1987) (effective Jan. 9, 1989) (NPDW -- MCL) -- 200  $\mu g/1$ .

Soil RI Analyte: Yes Soil EA Analyte: Yes Potential Soil ARAR: No

Surface Water RI Analyte: Yes

Potential Surface Water ARAR: (a) 40 C.F.R. § 141.50 (NPDW -- MCLG) -- 200  $\mu$ g/l;

(b) 40 C.F.R. § 141.61(a); 52 Fed. Reg. 25716 (1987) (effective Jan. 9, 1989) (NPDW -- MCL) -- 200  $\mu g/1$ .

Biota RI Analyte: No Potential Biota ARAR: No

PRIMARY NAME: Trichloroethylene (Trichloroethene, TCE)

CERCLA Hazardous Substance: Yes

Ranking on ATSDR Priority List: Priority Group 1

Air Analyte: Yes Potential Air ARAR: No

Ground Water RI Analyte: Yes

Potential Ground Water ARAR:

40 C.F.R. § 141.61(a); 52 (a) Fed. Reg. 25716 (1987) (effective Jan. 9, 1989) (NPDW -- MCL) -- 5  $\mu$ g/1;

45 Fed. Reg. 79341 (1980) (b) (AWQC) -- 27  $\mu$ g/1 (10<sup>5</sup>), 2.7  $\mu$ g/1 (10<sup>5</sup>), 0.27  $\mu$ g/1 (10<sup>-7</sup>) (Human Health).

Soil RI Analyte: Yes Soil EA Analyte: Yes Potential Soil ARAR: No

Surface Water RI Analyte: Yes

Potential Surface Water ARAR: (a)

45 Fed. Reg. 79341 (1980)  $(\lambda WQC) = 27 \mu g/1 (10^{-5}),$ 2.7 \mu g/1 (10^{-6}), 0.27 \mu g/1 (10') (Human Health);

45 Fed. Reg. 79341 (1980) (b)  $(AWQC) -- 45,000 \mu g/1$ (Aquatic Life).

Biota RI Analyte: No Potential Biota ARAR: 68. PRIMARY NAME: Xylene (includes m,o, p-Xylene)

CERCLA Hazardous Substance: Yes

Ranking on ATSDR Priority List: Priority Group 3

Air Analyte: Yes

Potential Air ARAR: No

Ground Water RI Analyte: Yes

Potential Ground Water ARAR: 40 C.F.R. § 180.1025(c)

(TPCRAC) -- Xylene is not to be applied to irrigation conveyances where there is any likelihood that the irrigation water will be used as a source of potable water, or that return flows to rivers and streams could contain residues of Xylene in excess of 10 parts per million.

Soil RI Analyte: Yes Soil EA Analyte: Yes Potential Soil ARAR: No

Surface Water RI Analyte: Yes

Potential Surface Water ARAR: 40 C.F.R. § 180.1025(c)

(TPCRAC) -- Xylene is not to be applied to irrigation conveyances where there is any likelihood that the irrigation water will be used as a source of potable water, or that return flows to rivers and streams could contain residues of Xylene in excess of 10

parts per million.

Biota RI Analyte: No Potential Biota ARAR: No

69. PRIMARY NAME: Zinc

CERCLA Hazardous Substance: Yes

Ranking on ATSDR Priority List: Priority Group 2

Air Analyte: Yes

Potential Air ARAR: No

Ground Water RI Analyte: Yes Potential Ground Water ARAR: No

Soil RI Analyte: Yes Soil EA Analyte: Yes Potential Soil ARAR: No

Surface Water RI Analyte: Yes

Potential Surface Water ARAR: 45 Fed. Reg. 79341 (1980)

(AWQC) -- 24 hour average is 47  $\mu$ g/l and should not exceed e (0.33[In(hardness)] + 1.95)

at any one time (Aquatic

Life).

Biota RI Analyte: No Potential Biota ARAR: No 70. PRIMARY NAME: Zinc oxide

CERCLA Hazardous Substance: Yes Ranking on ATSDR Priority List: No

Air Analyte: Yes (Zinc) Potential Air ARAR: No

Ground Water RI Analyte: Yes (Zinc) Potential Ground Water ARAR: Soil RI Analyte: Yes (Zinc) Soil EA Analyte: Yes (Zinc)

Potential Soil ARAR: No

Surface Water RI Analyte: Yes (Zinc)

Potential Surface Water ARAR: 45 Fed. Reg. 79341 (1980)

(AWQC-Zinc) -- 24 hour average is 47  $\mu$ g/l and should not exceed e (0.83 [In(hardness)]

+ 1.95) at any one time

(Aquatic Life).

Biota RI Analyte: No Potential Biota ARAR: RESPONSES TO COMMENTS ON

CHEMICAL-SPECIFIC ARARS

FOR THE OFF-POST OPERABLE UNIT

# RESPONSES TO COMMENTS ON CHEMICAL SPECIFIC ARARS FOR THE OFF-POST OPERABLE UNIT

# 1. Shell Comments on the Proposed ARARs for the Off-Post Operable Unit

## A. SHELL GENERAL COMMENTS:

Shell's comments on the potential chemical-specific ARARs may be categorized into the following general issues:

- 1. The use of standards based upon EPA Carcinogen Assessment Group (CAG) methodologies;
- 2. The use of MCLs;
- 3. The use of MCLGs;
- 4. The use of Ambient Water Quality Criteria (AWQC);
- 5. The use of RCRA permit conditions;
- 6. The use of National Emission Standards for Hazardous Air Pollutants (NESHAPS);
- 7. The use of EPA and FDA action levels and tolerances for agricultural commodities;
- 8. The application points for ARARs.

Comments which have been submitted to the Army on previous occasions regarding these issues are summarized below.

# Shell General Comments on the Use of Standards Based on EPA CAG Methodologies:

As expressed to the Army on numerous occasions, CAG methodology is premised on invalid assumptions. EPA has stated that performing a quantitative assessment should never appear to remove the underlying uncertainty in the quality of evidence. The displayed "upper-limit risk" therefore should be accompanied, where appropriate, with explicit acknowledgment that the agent may not be a human carcinogen at all, and that there may be zero risk of cancer to humans due to exposure. Moreover, it should be made clear to the reader that there is currently no way to decide whether the upper-bound value for risk is more or less likely to be the true risk than the lower-bound value (zero). See letter for Edward J. McGrath to Donald L. Campbell, May 12, 1988.

The linearized multistage model used by the CAG leads to a plausible upper limit to the risk that is consistent with some proposed mechanism of carcinogenesis. Such an estimate, however, does not necessarily give a realistic prediction of the risk. The value of the risk is unknown, and may be as low as zero. 51 Fed. Reg. 33997-33998 (September 24, 1986).

The choice of which low-dose extrapolation model to use and the animal data set to utilize in the model to derive estimates of upper-bounds of risk are not matters currently settled by science. EPA recognizes that "risks at low exposure levels cannot be measured directly by either animal experiments or mathematical models . . . a number of mathematical models have been developed to extrapolate from high to low dose." No single mathematical procedure is recognized as the most appropriate for low-dose extrapolation in carcinogenesis, 51 Fed. Reg. 33992-34003, (September 24, 1986). For several reasons, the unit cancer risk estimate based on animal bioassays is only an approximate indication of the absolute risk in populations exposed to carcinogens. See EPA, The Endangerment Assessment Handbook, August 1985. Different extrapolation models and data sets may lead to large differences in estimates of upper-bound risk at low doses and, even if one accepts the data as a basis for modeling, such modeling generates a widely diverse range of risk estimates depending on the model used. CAG selects data sets and models so as to derive unnecessarily conservative estimates of the upper-bound of risk. See letter from Edward J. McGrath to Donald L. Campbell, May 12, 1988.

# Response to Shell General Comments on the Use of Standards Based on EPA CAG Methodologies:

While the Army recognizes that Shell is dissatisfied with the regulations, standards, criteria or limitations that have been set, in whole or in part, pursuant to the CAG methodology, it is the Army's position that this is not the appropriate context to debate the merits of the CAG methodology that produced such regulations, standards, criteria or limitations. Shell has already had an opportunity to raise its CAG methodological concerns with EPA's Cancer Assessment Group. If EPA hereafter determines to modify the CAG methodology prior to the issuance of the Off-Post RMA ROD, such modification(s) will be applied in each pertinent instance to the substances identified herein for the Off-Post RMA Operable Unit. Until such time, the Army will not look behind or question the CAG methodology that produced any of the chemical-specific regulations, standards, criteria or limitations identified as potential ARARs in this appendix.

# Shell General Comments on the Use of MCLGs:

Shell does not believe that it is necessary for MCLGs to be considered as potential ARARs. Only MCLs, not MCLGs, are required to be met at the point of human consumption for drinking water. It is our understanding that the use of MCLGs as potential ARARs is undergoing internal review by EPA. At some future time when

EPA reports a decision on this matter, Shell may submit additional comments regarding the use of MCLGs as the basis of potential ARARs.

Furthermore, MCLGs for carcinogens are usually set at zero based on EPA CAG methodologies. The current CAG methodology uses potency measures, such as unit risk and relative risks, which are based on upper bounds and not on fitted model values. These measurements do not differentiate between carcinogens on the basis of available experimental data about the shapes of the dose-response relationship. The inability to differentiate between risks is a serious deficiency in CAG methodology. Therefore, the use of MCLGs as potential ARARs is generally inappropriate.

# Response to Shell General Comments on the Use of MCLGs:

1

Non-zero MCLGs are identified as potential ARARs for purposes of this appendix in order to ensure that the decisionmaking process for the Off-Post Operable Unit will take into account all regulations, standards, criteria or limitations that bear a clean-up relationship to the chemicals found off-post from RMA, irrespective of whether such regulations, standards, criteria or limitations are ultimately selected as ARARs. If EPA hereafter determines to issue new guidance on the use of MCLGs prior to the issuance of the Off-Post RMA ROD, such guidance will be applied accordingly in each pertinent instance to the substances identified for the Off-Post RMA Operable Unit.

Shell's CAG-related concerns are addresses in the preceding comment.

## Shell General Comments on the Use of Ambient Water Quality Criteria:

Shell has previously rejected Army proposals for groundwater ARARs based on Ambient Water Quality Criteria (AWQC). See letter from Edward J. McGrath to Charles Scharmann, June 21, 1988, commenting on IRA North of RMA. Shell has also submitted comments to the Army stating that the aquatic life values are merely published as guidance, and do not constitute an Ambient Water Quality Criterion. See letter of Edward J. McGrath to Donald L. Campbell, June 17, 1988. In many instances, the values cited by the Army as the basis of proposed ARARs are based upon the assumption of factors for the human consumption of drinking water and aquatic life. Naturally, fish are not collected from groundwater. Therefore, aquatic life values cannot be potential ARARs for groundwater on the RMA. See also Colorado Basic Standards and Methodologies at 5 CCR 1002-8.

Shell appreciates the consideration being given to these difficult issues by the Army, as reflected in the following footnote:

It should be noted that whether the AWQC values designated herein as potential groundwater ARARs are appropriate for utilization as ARARs is a matter that warrants serious consideration during the course of Endangerment Assessment decisionmaking. Since the indicated AWQC values are predicated on human consumption both of water and aquatic

organisms in that water, and groundwater does not contain aquatic life, use of alternative values (such as the adjusted AWQC found in the 1986 Superfund Public Health Evaluation Manual) may well be more appropriate in connection with groundwater.

Volume III, Appendix H at vi.

# Response to Shell General Comments on the Use of Ambient Water Quality Criteria:

The Army's position remains as set forth in Footnote No. 1 of the appendix.

Non-zero Ambient Water Quality Criteria are identified as potential ARARs for purposes of this appendix in order to ensure that they will be taken into account for possible future use in setting cleanup levels, irrespective of whether such Ambient Water Quality Criteria are ultimately selected as ARARs for use in the Off-Post RMA Operable Unit.

# Shell General Comments on the Use of RCRA Permit Conditions:

Shell has commented previously on the Army proposal of chemical-specific ARARs based on 40 CFR § 264.94(a)(2). These standards in this section are the same as the MCLs. Shell has previously set forth its position on the use of MCLs at the Arsenal boundaries. The levels in 40 CFR § 264.94(a)(2) are intended to trigger corrective action at RCRA TSD facilities. Since the Arsenal is being remediated pursuant to CERCLA, we do not believe that Section 264.94(a)(2) can be a potential ARAR. See letter from Edward J. McGrath to Donald L. Campbell, August 30, 1988.

# Response to Shell General Comments on the Use of RCRA Permit Conditions:

While the On-Post and Off-Post RMA Operable Units are being remediated pursuant to CERCLA, it is nevertheless proper to consider as potential CERCLA cleanup standards all regulations, standards, criteria or limitations that bear a relationship to the identified chemicals, including those found in the RCRA regulations. Thus, RCRA regulations are identified as potential ARARs for purposes of this appendix in order to ensure that they will be taken into account for possible future use in setting cleanup levels, irrespective of whether such regulations are ultimately selected as ARARs for use in the Off-Post Operable Unit.

# Shell General Comments on the Use of National Emission Standards for Hazardous Air Pollutants (NESHAPS):

NESHAPS are source-specific and chemical-specific air emission standards which have been promulgated under the Clean Air Act. The standards are intended to be applied to emissions from a "stationary source" such as a stack in a particular industry. It is therefore clearly inappropriate to use NESHAPS as the basis of ARARs at RMA.

Chemical-specific ARARs have been listed in Appendix H for any compound believed to be present in the air, surface water, groundwater, or soil. Potential ARARs are listed, however, for compounds for which there is unquestionable proof of their presence. For example, in the case of endrin the following statement is made:

[A]t all other wells, duplicate samples consistently reproduced concentrations less than CRLs.

Volume I at 3-101.

A similar argument could be made for tetrachloroethylene and trichloroethylene. See Volume I at 3-81.

Response to Shell Comments on the Use of the National Emission Standards for Hazardous Air Pollutants:

NESHAP's regulations are identified in this context in order to ensure full consideration as possible CERCLA cleanup standards all regulations, standards, criteria or limitations that bear a relationship to the identified chemicals, including those found in the NESHAP's regulations. Thus, NESHAP's regulations are identified as potential ARARs for purposes of this appendix irrespective of whether such regulations are well-suited or ultimately selected as ARARs for use in the Off-Post Operable Unit.

ARARs will be selected for all chemicals from RMA found in the recent past in Off-Post air, surface water, groundwater, soil or biota.

### B. SHELL CHEMICAL-SPECIFIC COMMENTS ON APPENDIX H

Shell Comments on Aldrin:

#### PROPOSED GROUNDWATER ARAR:

Shell disagrees with the Army proposal of 0.003  $\mu$ g/l as an ARAR, which is the ambient water criterion for aldrin/dieldrin in navigable waters based on an FDA tolerance level of 0.3 ppm for fish times an application factor of 0.01. 40 C.F.R. § 129.100 (a)(3).

Shell also disagrees with an assumption underlying this criterion. That assumption is that "there is no demonstrated 'no effect level'." See 41 Fed. Reg. 23,584 (1976). As Shell has previously explained in comments, developments in modelling, such as those by Sielken, indicate that this assumption is invalid. In addition, a water quality criterion designed to provide for protection of aquatic life is not relevant and appropriate. The criterion was intended to address the impact of bioaccumulation in fish and their food sources on the biological transport of aldrin/dieldrin to birds and to mammals, including man. 41 Fed. Reg. 23,584 (1976).

Furthermore, aldrin and dieldrin are considered by the EPA CAG to be an animal carcinogen and a suspected human carcinogen. As stated in previous comments, numerous carcinogenicity tests in a variety of animals indicate that aldrin and dieldrin promote only liver tumors and the tumors develop only in mice. On the basis of this species-specific effect, aldrin and dieldrin are improperly categorized by the EPA as animal carcinogens.

#### PROPOSED SURFACE WATER ARAR:

Shell disagrees with the Army proposal of 3.0 µg/l as an ARAR. The aquatic life value published at 45 Fed. Reg. 79325 is merely guidance, and does not constitute an ambient Water Quality Criterion. See 45 Fed. Reg. at 79,322 ("The aquatic life criteria specify both maximum and 24-hour average values. In those cases where there were insufficient data to allow the derivation of a criterion, narrative descriptions of apparent threshold levels for acute and/or chronic effects based on the available data are presented. These descriptions are intended to convey a sense of the degree of toxicity of the pollutant in the absence of a criterion recommendation.").

Shell questions why the Army did not consider the State surface water standard for Aldrin (.003 µg/l) promulgated pursuant to the Colorado Water Quality Control Act as a potential ARAR. See 5 Colo. Code Reg. 1002-8 3.8.5(2) hereinafter referred to as "South Platte Organics Standards" (1987).

# Response to Shell Comments on Aldrin:

In this appendix, the Army has only designated potential ARARs for Aldrin. Whether these potential ARARs merit selection as ARARs will be determined in the context of the Feasibility Study/Endangerment Assessment Report for the Off-Post Operable Unit.

While the Army understands Shell's CAG-related concerns, as explained in the Army's response to Shell's general comments, reassessment of the merits of the CAG methodology is a national EPA issue that must be resolved by FPA in the first instance. If EPA determines to modify the CAG methodology during the course of the Off-Post RMA RI/FS, such modification(s) will be applied in each pertinent instance to the substances identified agreen.

The Army did not consider the South Platte Organics Standards for Aldrin because the State standard is not more stringent than the designated potential Federal ARARs and the Army is unable to determine from presently available information whether the standard was properly promulgated or could effectively result in the statewide prohibition of land disposal (where the standard is not of general applicability or adopted on the basis of hydrologic, geologic or other relevant considerations).

# Shell Comments on (3) Arsenic and (4) Arsenic trioxide:

## AIR ARAR:

Shell disagrees with the Army proposal of arsenic concentrations in air of 2.5 mg/year and less than 0.4 mg per year based on 40 CFR Section 61.162(b)(1) and 40 CFR § 61.162(b)(1), respectively.

Shell disagrees with the Army proposal of uncontrolled arsenic emissions of 2.5 mg per year as an ARAR. The National Emission Standard for Inorganic Arsenic Emissions from Glass Manufacturing Plants is neither applicable nor relevant and appropriate. See 40 CFR § 61.160-162(a)(j). Shell disagrees with the Army proposal of 0.4 mg per year of uncontrolled arsenic emissions from new or modified glass melting furnaces as an ARAR, because the National Emission Standard for Inorganic Arsenic Emissions from Glass Manufacturing Plants is neither applicable nor relevant and appropriate because commercial arsenic is not used in any remediation processes. See 40 CFR § 61.160-162(b)(1). In addition to other difficulties in using such standards as ARARs, the theoretical arsenic emissions factor is expressed as the amount of arsenic, expressed in grams per kilogram of glass produced, as determined on a material balance.

#### PROPOSED GROUNDWATER ARAR:

Shell agrees with the Army proposal of the MCL of 50 µg/l as an ARAR. The National Academy of Sciences Drinking Water Committee, NAS, and the World Health Organization, WHO, have prepared recommendations and guidelines, respectively, for inorganic contaminant in drinking water, based upon non-carcinogenic, no observed adverse effects levels in humans with considerations for a margin of safety. The MCL is based upon guidance from these organizations and upon reasonable scientific studies and peer reviews of these studies.

The State Human Health standard is the same as the MCL, and is therefore not more stringent than the Federal standard.

Shell disagrees with the Army proposal of 50 ug/l as an ARAR based on 40 CFR § 264.94(a)(2) for the reasons set forth above.

Shell disagrees with the Army proposal of 22  $\mu$ g/l as an ARAR. The aquatic life value published at 45 Fed. Reg. 79328 is merely guidance, and does not constitute an AWQC.

# PROPOSED SURFACE WATER ARAR:

Shell disagrees with the proposed ARARs for the reasons stated above regarding our concerns with the CAG methodology.

# Response to Shell Comment on (3) Arsenic and (4) Arsenic trioxide:

In this appendix, the Army has only designated potential ARARs for Arsenic and Arsenic trioxide. Whether these potential ARARs merit selection as ARARs will be determined in the context of the Feasibility Study/Endangerment Assessment Report for the Off-Post Operable Unit.

The Army has designated the NESHAP's standard for arsenic as a potential ARAR for Arsenic and Arsenic trioxide because it warrants consideration as a possible guideline for use in controlling Arsenic emissions during the course of remediation. Whether this standard has any practical application in the context of the cleanup will be determined in the Feasibility Study/Endangerment Assessment for the Off-Post RMA Operable Unit.

The designation of 50  $\mu$ g/l (40 C.F.R. § 264.94(a)(2)) as a potential ARAR for a CERCLA cleanup is warranted because such a criterion is not inconsistent with CERCLA, the NCP and EPA guidance that is not inconsistent with CERCLA and the NCP.

As discussed above, Shell's concerns with CAG methodology do not properly arise in this context.

The balance of Shell's comment concerns the areas of its agreement with the Army's initial determination and thus requires no further discussion in this context.

## 6. Shell Comments on Benzene:

#### POTENTIAL GROUNDWATER ARAR:

Shell disagrees with the Army proposal of the MCL of 5  $\mu$ g/l as an ARAR. The benzene MCL is based on CAG methodology and is therefore unacceptable for the reasons outlined above in the general comments.

Shell disagrees with the Army proposal of the AWQC of 6.6  $\mu$ g/1 as an ARAR. The aquatic life value published in 45 Fed. Reg 79326 is merely guidance, and does not constitute an AWQC. Furthermore, this guidance is based upon CAG methodologies, and therefore unacceptable for the reasons outlined above in the General Comments.

## PROPOSED SCREACE WALLR ARAR:

Shell disagrees with the Army proposal of 5,300 ag/l as an ARAR. The Aquatic Life value published at 45 Fed. Reg. 79326 is merely guidance, and does not constitute an ambient Water Quality Criterion.

# Response to Shell Comments on Benzene:

In this appendix, the Army has only designated potential ARARs for Benzene. Whether these potential ARARs merit selection as ARARs will be determined in the context of the Feasibility Study/Endangerment Assessment Report for the Off-Post Operable Unit.

While the Army understands Shell's CAG-related concerns, as explained in the Army's response to Shell's general comments, reassessment of the merits of the CAG methodology is a national EPA issue that must be resolved by EPA in the first instance. If EPA determines to modify the CAG methodology during the course of the Off-Post RMA RI/FS, such modification(s) will be applied in each relevant instance to the substances identified herein.

## 7. Shell Comments on Cadmium:

## PROPOSED GROUNDWATER ARAR:

Shell agrees with the Army proposal of 10  $\mu$ g/l as an ARAR for the reasons outlined in the arsenic comment.

The State Human Health standard is the same as and is based on the MCL, and is therefore not an ARAR

Shell disagrees with the Army proposal of 50  $\mu$ g/l as an ARAR based upon 40 C.F.R. 264.94(a)(2) for the reasons stated above in the discussion of RCRA permit conditions.

## PROPOSED SCREACE WATER ARAR:

Shell tentatively accepts the Army proposal of the AWOC (Aquatic Life) standard (max: e (l.05 [In hardness)] -3.73) as a potential ARAR. Shell questions why the Army did not consider the State surface water standard for cadmium (0.001  $\mu$ g/l) as a potential ARAR. See discussion of Ambient Water Quality Criteria.

For reasons stated above in the discussion of RCRA permit conditions, Shell disagrees with 40 CFR § 264.94(a)(2).

# Response to Shell Comments on Cadmium:

In this appendix, the Army has only designated potential ARARs for Cadmium, Whether these potential ARARs merit selection as ARARs will be determined in the context of the Feusibility Study/Endangerment Assessment for the Off-Post Operable Unit.

Shell's first, second and fourth comments concern its tentative agreement with the Army's initial determination for Cadmium and thus requires no further discussion in this context.

The Army's designation of 50  $\mu$ g/l (40 C.F.R. § 264.94(a)(2)) as a potential ARAR for a CERCLA cleanup is warranted because such a criterion is not inconsistent with CERCLA, the NCP and EPA guidance that is not inconsistent with CERCLA and the NCP.

The Army did not consider the State surface water standard for Cadmium to be a potential ARAR because the Army is unable to determine from presently available information whether the State standard was properly promulgated or could effectively result in the statewide prohibition of land disposal (where the standard is not of general applicability or adopted on the basis of hydrologic, geologic or other relevant considerations).

## 12. Shell Comments on Carbon Tetrachloride:

## PROPOSED GROUNDWATER ARAR:

Shell disagrees with the Army proposal of the MCL of 5  $\mu$ g/l as an ARAR. The carbon tetrachloride MCL is based on CAG methodology and is therefore unacceptable for the reasons set forth above.

Shell also disagrees with the use of the AWQC of 4  $\mu$ g/l as an ARAR for carbon tetrachloride, because this value is based on CAG methodology, and is therefore unacceptable for the reasons set forth above.

#### PROPOSED SURFACE WATER ARAR:

Shell disagrees with the Army proposal of the MCL of 5  $\mu$ g/1 as an ARAR. The carbon tetrachloride MCL is based on CAG methodology, and is therefore unacceptable for the reasons set forth above.

Shell disagrees with the Army proposal of 32,200  $\mu$ g/l as an ARAR. The aquatic life value published at 45 Fed. Reg. 79327 is merely guidance, and does not constitute an ambient Water Quality Criterion.

# Response to Shell Comments on Carbon Tetrachloride:

In this appendix, the Army has only designated potential ARARs for Carbon Tetrachloride. Whether these potential ARARs merit selection as ARARs will be determined in the context of the Feasibility Study/Endangerment Assessment Report for the Off-Post Operable Unit.

While the Army understands Shell's CAG-related concerns, as explained in the Army's response to Shell's general comments, reassessment of the merits of the CAG methodology is a national EPA issue that must be resolved by EPA in the first instance. If EPA determines to modify the CAG methodology during the course of the Off-Post RMA RI/FS, such modification(s) will be applied in each pertinent instance to the substances identified herein.

## 14. Shell Comments on Chlorinated phenol:

## PROPOSED SURFACE WATER ARAR:

Shell disagrees with the Army proposal of  $500,000 \mu g/l$  as an ARAR. The aquatic life value published at 45 Fed. Reg. 79329 is merely guidance, and does not constitute an ambient Water Quality Criterion.

# Response to Shell Comments on Chlorinated phenol:

In this appendix, the Army has only designated potential ARARs for Chlorinated phenol. Whether the e potential ARARs merit selection as ARARs will be determined in the context of the Feasibility Study/Endangerment Assessment Report for the Off-Post Operable Unit.

The use of AWQC as potential ARARs is warranted because such a criterion is not inconsistent with CERCLA, the NCP and EPA guidance not inconsistent with CERCLA and the NCP.

#### 15. Shell Comments on Chlorobenzene:

#### PROPOSED GROUNDWATER ARAR:

The value cited by the Army is incorrect. The human health AWQC for chlorobenzene, as reported at 45 Fed. Reg. 79327-28, is 488  $\mu$ g/l. This value has been derived from non-referenced sources for the protection of human health. The references do not advise the reader on the toxicological endpoints considered or the assumptions incorporated in performing the calculations for values protective of human health. Furthermore, the standard attempts to protect biota in surface water, which may not be appropriate for groundwater. We therefore disagree with the proposed ARAR of 448  $\mu$ g/l.

#### PROPOSED SURFACE WATER ARAR:

Shell disagrees with the Army proposal of 250  $\mu$ g/l as an ARAR. The aquatic life value published at 45 Fed. Reg. 79237 is merely guidance, and does not constitute an ambient Water Quality Criterion.

# Response to Shell Comments on Chlorobenzene:

In this appendix, the Army has only designated potential ARARs for Chlorobenzene. Whether these potential ARARs merit selection as ARARs will be determined in the context of the Feasibility Study/Endangerment Assessment Report for the Off-Post Operable Unit.

The human health AWQC for groundwater (488  $\mu$ g/l) was correct and thus no change was necessary to this appendix.

The use of the AWQC as potential ARARs is warranted because such a criterion is not inconsistent with CERCLA, the NCP and EPA guidance not inconsistent with CERCLA and the NCP.

## 16. Shell Comments on Chloroform:

## PROPOSED GROUNDWATER ARAR:

Shell tentatively accepts the MCL of  $100 \mu g/l$  as the proposed MCL. The MCL is based upon the median range of chloroform concentrations in U.S. drinking water pursuant to an EPA study.

Shell disagrees with the Army proposal of 1.9  $\mu$ g/l (10 $^{\circ}$ ) as an ARAR. The aquatic life value published at 45 Fed. Reg. 79330 is merely guidance, and does not constitute an AWQC. Furthermore, the AWQC is based on the underlying assumption that there is no threshold level and is premised on CAG methodology.

## Response to Shell Comments on Chloroform:

In this appendix, the Army has only designated potential ARARs for Chloroform. Whether these potential ARARs merit selection as ARARs will be determined in the context of the Feasibility Study/Endangerment Assessment Report for the Off-Post Operable Unit.

Shell's initial comment concerns its tentative agreement with the Army's initial determination for Chloroform and thus requires no further discussion in this context.

Shell's second comment concerns the appropriateness of the AWQC aquatic life value as a potential ARAR. Use of such guidance as a potential ARAR is not inconsistent with CERCLA, the NCP and EPA guidance not inconsistent with CERCLA and the NCP.

As discussed above, Shell's concerns with CAG methodology do not properly arise in this context.

## 17. p-Chlorophenyl methyl sulfide

# 18. p-Chlorophenyl methyl sulfone

# 19. p-Chlorophenyl methyl sulfoxide

#### PROPOSED SURFACE WATER ARAR:

Shell tentatively accepts the Army proposal of the AWQC standard of 4,380 ng/1 as potential ARAR for these three compounds.

Response to Shell Comments on p-Chlorophenyl methyl sulfide, p-Chlorophenyl sulfone and p-Chlorophenyl methyl sulfoxide:

In this appendix, the Army has only designated potential ARARs for p-Chlorophenyl methyl sulfide, p-Chlorophenyl sulfone and p-Chlorophenyl methyl sulfoxide. Whether these potential ARARs merit selection as ARARs will be determined in the context of the Feasibility Study/Endangerment Assessment Report for the Off-Post Operable Unit.

Shell's comment concerning its tentative acceptance of the Army's initial determination for these three compounds requires no further discussion in this context.

# 20. Shell Comments on Chromium:

#### PROPOSED GROUNDWATER ARAR:

Shell agrees with the Army proposal of the MCL of 50  $\mu$ g/l as an ARAR for the reasons outlined in the arsenic comment. The State Human Health standard is the same as and is based on the MCL, and is therefore not an ARAR.

Shell disagrees with the Army proposal of 50  $\mu$ g/1 as an ARAR based upon 40 CFR § 264.94(a)(2) for the reasons set forth above for the reasons stated in the discussion of RCRA permit conditions.

#### PROPOSED SURFACE WATER ARAR:

Shell tentatively accepts the Army proposal of the AWQC (Aquatic Life) standard as a potential ARAR. Shell questions why the Army did not consider the State surface water standards for Cr III (50  $\mu$ g/l) and Cr VI (25  $\mu$ g/l) as potential ARARs. See discussion of Ambient Water Quality Criteria.

Shell disagrees with the Army proposal 50  $\mu$ g/l as an ARAR based upon 40 CFR § 294.94(a)(2) for the reasons set forth above for the reasons stated in the discussion of RCRA permit condition.

# Response to Shell Comments on Chromium:

In this appendix, the Army has only designated potential ARARs for Chromium. Whether these potential ARARs merit selection as ARARs will be determined in the context of the Feasibility Study/Endangerment Assessment Report for the Off-Post Operable Unit.

Shell's comments concern it agreement with and tentative acceptance of the Army's initial determination for Chromium and thus requires no further discussion in this context.

The Army did not consider the State surface water standard for Chromium III to be a potential ARAR because it is not more stringent than the designated potential Federal ARARs and because the Army is unable to determine from presently available information whether the standard was properly promulgated or could effectively result in the statewide prohibition of land disposal (where the standard is not of general applicability or adopted on the basis of hydrologic, geologic or other relevant considerations). The State surface water standard for Chromium VI was not determined to be a potential ARAR because the Army is unable to determine from presently available information whether the standard was properly promulgated or could effectively result in the statewide prohibition of land disposal (where the standard is not of general applicability or adopted on the basis of hydrologic, geologic or other relevant considerations).

The designation of 50  $\mu$ g/l (40 C.F.R. § 264.94(a)(2)) as a potential ARAR for a CERCLA cleanup is not inconsistent with CERCLA, the NCP and EPA guidance that is not inconsistent with CERCLA and the NCP.

#### 21. Shell Comments on Chromium III:

## PROPOSED GROUNDWATER ARAR:

Shell disagrees with the Army proposal of the AWQC of 0.170  $\mu$ g/1 as an ARAR based upon the AWQC. The aquatic life value published at 45 Fed. Reg. 79331 is merely guidance and does not constitute an AWQC.

## PROPOSED SURFACE WATER ARAR:

Shell does agree with the Army's proposed ARARs for surface water.

# Response to Shell Comments on Chromium III:

In this appendix, the Army has only designated potential ARARs for Chromium III. Whether these potential ARARs merit selection as ARARs will be determined in the context of the Feasibility Study/Endangerment Assessment Report for the Off-Post Operable Unit.

Shell's initial comment concerns the appropriateness of the AWQC aquatic life value as a potential ARAR for Chromium III. Use of such guidance is warranted because such a criterion is not inconsistent with CERCLA, the NCP and EPA guidance not inconsistent with CERCLA and the NCP.

Shell's second comment concerns its agreement with the Army's proposed ARARs for surface water and thus requires no further discussion in this context.

## 22. Shell Comments on Chromium VI:

#### Proposed Groundwater ARAR:

Shell disagrees with the Army proposal of the AWQC of 50  $\mu$ g/l as an ARAR for the reasons set forth above. Shell does agree with the MCL as a groundwater ARAR/surface groundwater ARAR: Shell also agrees with the Army's proposed ARARs for surface water for chromium VI for the reasons set forth above. See discussion of AWOC.

## Response to Shell Comments on Chromium VI:

In this appendix, the Army has only designated potential ARARs for Chromium VI. Whether these potential ARARs merit selection as ARARs will be determined in the context of the Feasibility Study/Endangerment Assessment Report for the Off-Post Operable Unit.

Shell's initial comment expresses disagreement with the appropriateness of the AWQC aquatic life value as a potential ARAR for Chromium VI. Use of such guidance to designate a potential ARAR is warranted because such a criterion is not inconsistent with CERCLA, the NCP and EPA guidance not inconsistent with CERCLA and the NCP.

The remainder of Shell's comments concern its agreement with the Army's other designated potential ARARs and thus requires no further discussion in this context.

## Shell Comments on (23) Copper and (24) Copper Sulfate

#### PROPOSED SURFACE WATER ARAR:

Shell disagrees with the Army proposal of 1 ppm for potable water for residues of copper based upon 21 CFR § 193.90 for the reasons set forth above. See discussion of TPFA.

#### PROPOSED GROUNDWATER ARAR:

Shell agrees with the Army in not selecting the State Water Quality Standards for Secondary Drinking Water (1 mg/l) and Agricultural (.2 mg/l) uses as potential ARARs. The secondary drinking water standard is premised on the AWQC for human health (1 mg/l) which is based upon organoleptic data. Organoleptic concerns do not relate to protection of public health and environment and the agricultural value is not based on human health concerns.

#### PROPOSED SURFACE WATER ARAR:

Shell tentatively agrees with the Army proposal of the AWQC (Aquatic Life) standard as a potential ARAR. Shell questions why the Army did not consider the State surface water standard for Copper (25  $\mu$ g/l) as a potential ARAR. See discussion of Ambient Water Quality Criteria.

# Response to Shell Comments on (23) Copper and (24) Copper sulfate:

In this appendix, the Army has only designated potential ARARs for Copper and Copper sulfate. Whether these potential ARARs merit selection as ARARs will be determined in the context of the Feasibility Study/Endangerment Assessment Report for the Off-Post Operable Unit.

The Army's use of the standard for residues of Copper (21 C.F.R. § 193.90) as a potential ARAR is warranted became such a criterion is not inconsistent with CERCLA, the NCP and EPA guidance not inconsistent with CERCLA and the NCP. Whether such standard has any practical utility in this context will be determined in the Feasibility Study/Endangerment Assessment Report for the Off-Post Operable Unit.

The balance of Shell's comments concern its agreement and tentative agreement with the Army's initial determination for Copper and Copper sulfate and thus requires no further discussion in this context.

The State surface water standard for Copper was not determined to be a potential ARAR because it is not more stringent than the designated potential Federal ARARs and because the Army is unable to determine from presently available information whether the standard was properly promulgated or could effectively result in the statewide prohibition of land disposal (where the standard is not of general applicability or adopted on the basis of hydrologic, geologic or other relevant considerations).

## 25. Shell Comments on DDE:

#### PROPOSED GROUNDWATER ARAR:

Shell disagrees that the AWQC of 0.001  $\mu$ g/l should be selected as an ARAR based on 40 CFR 120.101(a)(3) for the reasons set forth above in the discussion of AWQC.

#### PROPOSED SURFACE WATER ARAR:

Shell disagrees with the Army proposal of 1,050  $\mu$ g/l as an ARAR. The aquatic life value published at 45 Fed. Reg. 79331 is merely guidance, and does not constitute an ambient water quality criterion. Shell questions why the Army did not consider the State surface water standard for DDE (.001  $\mu$ g/l) as a potential ARAR. See South Platte Organics Standards.

## Response to Shell Comments on DDE:

In this appendix, the Army has only designated potential ARARs for DDE. Whether these potential ARARs merit selection as ARARs will be determined in the context of the Feasibility Study/Endangerment Assessment Report for the Off-Post Operable Unit.

Shell's comments concern its disagreement with the use of AWQC for DDE as potential ARARs. Such use is warranted because these criteria are not inconsistent with CERCLA, the NCP and EPA guidance that is not inconsistent with CERCLA and the NCP.

The Army did not consider the South Platte Organics Standard for DDE to be a potential ARAR because the State standard is not more stringent than the designated potential Federal ARARs and because the Army is unable to determine from presently available information whether the standard was properly promulgated or could effectively result in the statewide prohibition of land disposal (where the standard is not of general applicability or adopted on the basis of hydrologic, geologic or other relevant considerations).

## 26. Shell Comments on DDT:

#### PROPOSED GROUNDWATER ARAR:

For the reasons set forth above, Shell disagrees that the AWQC of 0.0024  $\mu$ g/l should be selected as an ARAR based on 40 CFR § 129.101(a)(3).

#### PROPOSED SURFACE WATER ARAR:

Shell tentatively accepts the Army proposal of the AWQC (Aquatic Life) standard (24 hr:  $0.0010 \mu g/l$  and  $1.1 \mu g/l$  at any one time) as a potential ARAR.

## Response to Shell Comments on DDT:

In this appendix, the Army has only designated potential ARARs for DDT. Whether these potential ARARs merit selection as ARARs will be determined in the context of the Feasibility Study/Endangerment Assessment Report for the Off-Post Operable Unit.

While Shell disagrees with the use of AWQC for DDT as a potential ARAR, such use is warranted because such criteria are not inconsistent with CERCLA, the NCP or EPA guidance that is not inconsistent with CERCLA and the NCP.

Shell's comment expressing its tentative acceptance of the Army's initial determination with respect to surface water requires no further discussion in this context.

## 27. Shell Comments on 1,2-Dibromo-3-chloropropane:

#### BIOTA ARAR:

Shell disagrees with the use standards for food products under the Food and Drug Administration regulations because the standards are neither applicable nor relevant and appropriate to the remediation of RMA.

## Response to Shell Comments on 1,2-Dibromo-3-chloropropane:

The use of FDA standards as an aid to determining cleanup levels is warranted because such limitations are not inconsistent with CERCLA, the NCP and EPA guidance not inconsistent with CERCLA and the NCP. Whether such standards have any practical utility in this context will be determined in the Feasibility Study/Endangerment Assessment Report for the Off-Post Operable Unit.

## 28. Shell Comments on p-Dichlorobenzene:

#### PROPOSED GROUNDWATER ARAR:

Shell disagrees with the use of MCLGs as the basis of potential ARARs for the reasons set forth above.

Shell disagrees with the Army proposal of 400  $\mu$ g/1 as an ARAR. The AWQC is not adjusted for consumption of drinking water only, but includes consumption of aquatic organisms as well.

### PROPOSED SURFACE WATER ARAR:

Shell disagrees with the use of MCLGs as the basis of potential ARARs for the reasons set forth above.

Shell disagrees with the Army proposal 763  $\mu$ g/l as an ARAR. The Aquatic Life value published at 45 Fed. Reg. 79332 is merely guidance, and does not constitute an AWOC.

## Response to Shell Comments on p-Dichlorobenzene:

In this appendix, the Army has only designated potential ARARs for p-Dichlorobenzene. Whether these potential ARARs merit selection as ARARs will be determined in the context of the Feasibility Study/Endangerment Assessment Report for the Off-Post Operable Unit.

The use of MCLGs or AWOC as potential ARARs is warranted because such criteria are not inconsistent with CERCLA, the NCP and EPA guidance not inconsistent with CERCLA and the NCP.

## 18. Shell Comments on 1,2-Dichloroethane:

#### Proposed groundwater ARAR:

Shell disagrees with the Army proposal of the MCL of 5  $\mu$ g/l as an ARAR. This MCL is driven by CAG methodology, and therefore, for the reasons set forth above, is unacceptable to Shell.

#### PROPOSED SURFACE WATER ARAR:

Shell rejects the Army proposal of 0.5  $\mu$ g/1 based on 40 CFR 141.61(a) for the reasons set forth above.

## Response to Shell Comments on 1,2-Dichloroethane:

In this appendix, the Army has only designated potential ARARs for 1,2-Dichloroethane. Whether these potential ARARs merit selection as ARARs will be determined in the context of the Feasibility Study/Endangerment Assessment Report.

While the Army understands Shell's CAG-related concerns, as explained in the Army's response to Shell's general comments, reassessment of the merits of the CAG methodology is a national EPA issue that must be resolved by EPA in the first instance. If EPA determines to modify the CAG methodology during the course of the Off-Post RMA RI/FS, such modification(s) will be applied in each pertinent instance to the substances identified herein.

## 31. Shell Comments on 1,1-Dichloroethylene:

#### PROPOSED GROUNDWATER ARAR:

Shell disagrees with the Army proposal of the MCL of  $7 \mu g/l$  as an ARAR. This MCL is driven by CAG methodology and is therefore, for the reasons set forth above, unacceptable to Shell. Shell disagrees with the use of values based on MCLGs and AWQC as potential ARARs.

#### PROPOSED SURFACE WATER ARAR:

Shell disagrees with the Army proposal of 11,600 µg/l as an ARAR. The aquatic life value published at 45 Fed. Reg. 79332 is merely guidance, and does not constitute an AWQC. Shell disagrees with the use of values based on MCLGs as potential surface water ARARs for the reasons set forth above.

## Response to Shell Comments on 1,1-Dichloroethylene:

In this appendix, the Army has only designated potential ARARs for 1,1-Dichloroethylene. Whether these potential ARARs ment selection as ARARs will be determined in the context of the Feasibility Study/Endangerment Assessment Report for the Off-Post Operable Unit.

While the Army understands Shell's CAG-related concerns, as explained in the Army's response to Shell's general comments, reassessment of the merits of the CAG methodology is a national EPA issue that must be resolved by EPA in the first instance. If EPA determines to modify the CAG methodology during the course of the Off-Post RMA RI/FS, such modification(s) will be applied in each pertinent instance to the substances identified herein.

The use of the AWQC aquatic life value as a potential ARAR is warranted because such a criterion is not inconsistent with CERCLA, the NCP and EPA guidance not inconsistent with CERCLA and the NCP.

## 32. Shell Comments on 1,2-Dichloroephylene:

#### PROPOSED GROUNDWALLR ARAR:

Shell disagrees with the Army proposal of  $7 \mu g/1$  as a potential ARAR based upon the MCL. Shell disagrees with the Army proposal of the AWQC of  $0.3 \mu g/1$  based upon AWQC. The basis for this rejection is that this value is based upon CAG methodology, and the value is therefore unacceptable for the reasons set forth above.

## PROPOSED SURFACE WATER ARAR:

For the reasons stated above in the discussion of AWQC, Shell disagrees with the Army proposal of 7  $\mu$ g/l based on 52 Fed. Reg. 25716 (1987) as a potential ARAR.

For the reasons stated above in the discussion of CAG. Shell also disagrees with the Army proposal as 17 mg/l and 0.33  $\mu$ g/l at (10°) risk level as potential ARARs.

Shell disagrees with the Army proposal of 11,600  $\mu$ g/1 as an ARAR. The aquatic life value published at 45 Fed. Reg. 79332 is merely guidance, and does not constitute an AWQC.

## Response to Shell Comments on 1,2-Dichloroethylene:

In this appendix, the Army has only designated potential ARARs for 1,2-Dichloroethylene. Whether these potential ARARs merit selection as ARARs will be determined in the context of the Feasibility Study/Endangerment Assessment Report for the Off-Post Operable Unit.

As discussed above, Shell's concerns with the CAG methodology do not properly arise in this context.

The use of AWQC as potential ARARs is warranted because such criteria are not inconsistent with CERCLA, the NCP and EPA guidance not inconsistent with CERCLA and the NCP.

## 34. Shell Comments on Dieldrin:

## PROPOSED GROUNDWATER ARAR:

Shell disagrees with the Army proposal of 0.12 µg/l based on 40 CFR § 129,100(a)(3) as an ARAR for reasons set forth above in the comments on aldrin. Shell also disagrees with the Army proposal of the AWQC of 0.17 ng/l at (10°) risk level as a potential ARAR for reasons set forth above in the discussion of CAG.

## PROPOSED SCREACE WALLR ARAR:

Shell tentatively accepts the Army proposals of 0.0019  $\mu$ g/I for a 24-hour average and 2.5  $\mu$ g/I at any one time based on AWQC (Aquatic Life) standard as a potential ARAR.

Shell disagrees with the Army proposal of 0.71 ag/1 at 10° risk level based on AWQC for the consumption of drinking water and aquatic life for the reasons set forth above. See discussion of LPA CAG methodology.

## Response to Shell Comments on Dieldrin:

In this appendix, the Army has only designated potential ARARs for Dieldrin. Whether these potential ARARs merit selection as ARARs will be determined in the context of the Feasibility Study/Endangerment Assessment Report for the Off-Post Operable Unit.

The Army disagrees with Shell's comments on the use of 40 C.F.R. § (29.100(a)(3) as a potential ARAR for the same reasons set forth above in the response to Shell's comments on aidrin.

As discussed above, Shell's concerns about the CAG methodology do not properly arise in this context.

Shell's comment expressing its tentative acceptance of the Army's initial determination with respect to surface water requires no further discussion in this context.

## 37. Shell Comments on Endrin:

#### PROPOSED GROUNDWATER ARAR:

Shell agrees with the Army proposal of 0.2  $\mu$ g/l as an ARAR based on 40 CFR § 141.12.

Shell disagrees with the Army proposal of 0.2  $\mu$ g/1 as an ARAR based on 40 CFR § 264.94(a)(2) for the reasons set forth in the discussion of RCRA permit conditions.

Shell disagrees with the Army proposal of 1  $\mu$ g/l based on AWQC for reasons set forth above for the reasons set forth in the discussion of AWQC.

#### PROPOSED SURFACE WATER ARAR:

Shell tentutively accepts the Army proposal of the AWQC (Aquatic Life) standard (24 hr: .0023  $\mu$ g/l; max: .037  $\mu$ g/l) as a potential ARAR. Shell agrees with the Army in not including the State surface water standard for endrin (.004  $\mu$ g/l) as a potential ARAR because it is not more stringent than the AWQC. See discussion of Ambient Water Quality Criteria.

## BIOTA ARAR:

Shell rejects the Army proposal of zero tolerance for residues of endrin in agricultural products for the reasons set forth in the discussion of EPA and FDA action level tolerances.

## Response to Shell Comments on Endrin:

In this appendix, the Army has only designated potential ARARs for Endrin. Whether these potential ARARs merit selection as ARARs will be determined in the context of the Feasibility Study/Endangerment Assessment Report for the Off-Post Operable Unit.

While the Army understands Shell's CAG-related concerns, as explained in the Army's response to Shell's general comments, reassessment of the merits of the CAG methodology is a national EPA issue that must be resolved by EPA in the first instance. If EPA determines to modify the CAG methodology during the course of the Off-Post RMA RI/FS, such modification(s) will be applied in each pertinent instance to the substances identified herein.

Shell's disagreements with the use of RCRA regulations and AWQC as potential ARARs are addressed respectively in the responses to Shell's general comments on RCRA permit conditions and AWQC.

Shell's comments expressing its tentative acceptance of the Army's initial determination of C.F.R. § 141.12 and the aquatic life standard as potential ARARs require no further discussion in this context.

## 38. Shell Comments on Ethylbenzene:

#### PROPOSED GROUNDWATER ARAR:

Shell disagrees with the Army proposal of 1,400 µg/l as an ARAR. This value has been derived from non-referenced sources for the protection of human health. The references do not advise the reader on the toxicological endpoints considered or the assumptions incorporated in performing the calculations for values protective of human health. Furthermore, considerations which are protective of biota in surface.

#### Proposed Surface Water ARAR:

Shell disagrees with the Army proposals of 1,400  $\mu$ g/I 32,000  $\mu$ g/I based on AWQC as an ARAR for reasons set forth above.

## Response to Shell Comments on Ethylbenzene:

In this appendix, the Army has only designated potential ARARs for Ethylbenzene. Whether these potential ARARs merit selection as ARARs will be determined in the context of the Feasibility Study/Endangerment Assessment Report for the Off-Post Operable Unit.

While the Army understands Shell's CAG-related concerns, as explained in the Army's response to Shell's general comments, reassessment of the merits of the CAG-

methodology is a national EPA issue that must be resolved by EPA in the first instance. If E. A determines to modify the CAG methodology during the course of the Off-Post RMA RI/FS, such modification(s) will be applied in each pertinent instance to the substances identified herein.

## 39. Shell Comments on Fluoride:

#### PROPOSED GROUNDWATER ARAR:

Shell tentatively agrees with the Army proposal of the MCL of 4,000  $\mu$ g/l as an ARAR.

Shell rejects the Army proposal of 4,000  $\mu$ g/l based on 40 CFR 141.50(b) as a potential ARAR for the reasons set forth above in the discussion of MCLGS.

#### PROPOSED SURFACE WATER ARAR:

Shell rejects the Army proposal of 4,000  $\mu$ g/1 based on 40 CFR § 141.50(b) as a potential ARAR for the reasons set forth above in the discussion of AWQC.

## Response to Shell Comments on Fluoride:

In this appendix, the Army has only designated potential ARARs for Fluoride. Whether these potential ARARs merit selection as ARARs will be determined in the context of the Feasibility Study/Endangerment Assessment Report for the Off-Post Operable Unit.

Shell's comments expressing its tentative agreement with the Army's initial determination for Fluoride requires no further discussion in this context.

## 41. Shell Comments on Lead:

## AIR ARAR:

Shell questions why the Army did not consider the State regulations for the control of Hazardous Air Pollutants regarding lead as a potential ARAR. See 5 Colo. Code Reg. 1001-10 p. 52.

### PROPOSED GROUNDWATER ARAR:

Shell tentatively supports the MCL of 50  $\mu$ g/l as a potential ARAR for the reasons outlined in the arsenic comment.

Shell disagrees with the Army proposal of 50  $\mu$ g/l as an ARAR based upon 40 CFR § 264.94(a)(2) as an ARAR for the reasons set forth above in the RCRA discussion. Shell also disagrees with the Army proposal of the AWQC of 50  $\mu$ g/l as an



ARAR. The Aquatic Life Value published at 45 Fed. Reg. 79336 is merely guidance, and does not constitute an AWQC. Furthermore, this guidance is more stringent than the MCL.

#### PROPOSED SURFACE WATER ARAR:

Shell tentatively accepts the Army proposal of the AWQC (Aquatic Life) standard (24 hr: e(2.35 [In (hardness)] -9.48]; max: e(1.22 [In hardness)] -0.47) as an ARAR.

Shell disagrees with the Army proposal of 50  $\mu$ g/l based on 40 CFR 264.94(a)(2) as an ARAR for the reasons set forth above in the RCRA discussion.

## Response to Shell Comments on Lead:

In this appendix, the Army has only designated potential ARARs for Lead. Whether these potential ARARs merit selection as ARARs will be determined in the context of the Feasibility Study/Endangerment Assessment Report for the Off-Post Operable Unit.

The Army did not consider the lead standard in the CDH regulations for the Control of Hazardous Air Pollutants because this standard is not more stringent than the potential Federal ARARs.

The Army disagrees with Shell's position on the designation of RCRA requirements as potential ARARs for the reasons set forth above in response to Shell's general comment on RCRA permit conditions.

The use of the AWQC as potential ARARs is warranted because such criteria are not inconsistent with CERCLA, the NCP and EPA guidance not inconsistent with CERCLA and the NCP.

Shell's comments expressing its tentative acceptance of the Army's initial groundwater and surface water determinations requires no further discussion in this context.

## Shell Comments on (44) Mercuric chloride and (45) Mercury:

## AIR ARAR:

Shell disagrees with the Army proposal of emissions values based on 40 CFR 61.52 and (b) as ARARs for the reasons set forth above in the discussion of NESHAPs.

## PROPOSED GROUNDWATER ARAR:

Shell agrees with the Army proposal of the MCL of 2  $\mu$ g/l as an ARAR for the reasons outlined in the arsenic comments.

Shell disagrees with the Army proposal of 144 ng/l based on 45 Fed. Reg. 79336-79337 as an ARAR for the reasons set forth in the discussion of AWOC.

#### PROPOSED SURFACE WATER ARAR:

Shell tentatively accepts the Army proposal of the AWQC (Aquatic Life) standard (24 hr:  $.00057 \mu g/1$ ; max  $.0017 \mu g/1$ ) as an ARAR.

Shell disagrees with the Army proposal of 144 ng/l based on 45 Fed. Reg. 79336-79337 as an ARAR for the reasons set forth above in the AWQC discussion.

Shell disagrees with the Army proposal of 2  $\mu$ g/l based on 40 CFR § 264.94(a)(2) as an ARAR for the reasons set forth above in the RCRA discussion.

## Response to Shell Comments on (44) Mercuric chloride and (45) Mercury:

In this appendix, the Army has only designated potential ARARs for Mercuric chloride and Mercury. Whether these potential ARARs merit selection as ARARs will be determined in the context of the Feasibility Study/Endangerment Assessment Report for the Off-Post Operable Unit.

The Army declines to adopt Shell's opposition to the use of emissions values as potential ARARs for the reasons set forth above in response to Shell's general comments on NESHAPs.

The Army declines to adopt Shell's opposition to the use of 144 ng/l (45 Fed. Reg. 79336-79337) as a potential ARAR for the reasons set forth above in response to Shell's general comments on AWQC.

The Army declines to adopt Sheil's opposition to the use of 2  $\mu$ g/l (40 C.F.R. § 264.94(a)(2)) as a potential ARAR for the reasons set forth above in response to Shell's general comments on RCRA permit conditions.

The balance of Shell's comments concern its agreement or tentative acceptance of the Army's designation of potential ARARs and thus requires no further discussion in this context.

## 46. Shell Comments on Nitrate:

## PROPOSED GROUNDWATER ARAR:

Shell tentatively agrees that the MCL (10,000  $\mu$ g/l) for this chemical based on 40 C.F.R. § 141.11(b) should be treated as an ARAR.

#### SURFACE WATER ARAR:

Shell agrees with the Army in not selecting the State surface water standard for nitrates (10,000 ng/1) as a potential ARAR because it is the same as the corresponding Federal AWQC (1976) and therefore is not more stringent. See discussion of Ambient Water Quality Criteria.

## Response to Shell Comments on Nitrate:

In this appendix, the Army has only designated potential ARARs for Nitrate. Whether these potential ARARs merit selection as ARARs will be determined in the context of the Feasibility Study/Endangerment Assessment Report for the Off-Post Operable Unit.

Shell's comments expressing tentative agreement and agreement with the Army's initial groundwater and surface water determinations requires no further discussion in this context.

## 61. Shell Comments on p. p-TDE:

#### PROPOSED SURFACE WATER ARAP:

Shell disagrees with the Army proposal of 0.6  $\mu$ g/l, based on 45 Fed. Reg. 79331, as an ARAR for the reasons set forth above in the discussion of AWQC.

## Response to Shell Comments on p. p-TDE:

In this appendix, the Army has only designated potential ARARs for p, p-TDE. Whether these potential ARARs merit selection as ARARs will be determined in the context of the Feasibility Study/Endangerment Assessment Report for the Off-Post Operable Unit.

The Army declines to adopt Shell's opposition to the use of 0.6  $\mu$ g/l (45 Fed. Reg. 79331) as a potential ARAR for the reasons set forth above in response to Shell's general comments on AWQC.

## 62. Shell Comments on Tetrachlorobenzene:

#### PROPOSED GROUNDWATER ARAR:

Shell disagrees with the Army proposal of 38  $\mu$ g/l based on 45 Fed. Reg. 79327 as an ARAR for the reasons set forth above in the discussion of AWQC.

#### PROPOSED SURFACE WATER ARAR:

Shell disagrees with the Army proposals of 38  $\mu$ g/1 and 250  $\mu$ g/1 based on 45 Fed. Reg. 79327 as ARARs for the reasons set forth above.

## Response to Shell Comments on Tetrachlorobenzene:

In this appendix, the Army has only designated potential ARARs for Tetrachlorobenzene. Whether these potential ARARs merit selection as ARARs will be determined in the context of the Feasibility Study/Endangerment Assessment Report for the Off-Post Operable Unit.

The Army declines to adopt Shell's opposition to the use of  $38 \mu g/l$  or  $250 \mu g/l$  (45 Fed. Reg. 79327) as potential ARARs for the reasons set forth in response to Shell's general comments on AWQC.

## 64. <u>1,1,2,2-Tetrachloroethylene</u>:

### PROPOSED GROUNDWATER ARAR:

Shell disagrees with the Army proposal of 8  $\mu$ g/1 (10<sup>5</sup>) based on 45 Fed. Reg. 79341 as an ARAR for the reasons set forth above.

## PROPOSED SURFACE WATER ARAR:

Shell disagrees with the Army proposals of 8  $\mu$ g/1 (10<sup>5</sup>) based on 45 Fed. Reg. 79341 as an ARAR for the reasons set forth above.

## Response to Shell Comments on 1,1,2,2-Tetrachloroethylene:

In this appendix, the Army has only designated potential ARARs for 1,1,2,2-Tetrachloroethylene. Whether these potential ARARs merit selection as ARARs will be determined in the context of the Feasibility Study/Endangerment Assessment Report for the Off-Post Operable Unit.

The Army declines to adopt Shell's opposition to the use of 8  $\mu$ g/l (45 Fed. Reg. 79341) as potential ARARs for the reasons set forth above in response to Shell's general comments on AWQC.

## 65. Shell Comments on Toluene:

#### PROPOSED GROUNDWATER ARAR:

Shell disagrees with the Army proposal of 14,300  $\mu$ g/1 based on 45 Fed. Reg. 79340 (1980) as an ARAR for the reasons set forth above in the discussion of AWQCs.

#### PROPOSED SURFACE WATER ARAR:

Shell disagrees with the Army proposals of 14,300  $\mu$ g/l and 17,500  $\mu$ g/l as ARARs based on 45 Fed. Reg. 79340 (1980) for the reasons set forth above in the discussion of AWOC.

## Response to Shell Comments on Toluene:

In this appendix, the Army has only designated potential ARARs for Toluene. Whether these potential ARARs merit selection as ARARs will be determined in the context of the Feasibility Study/Endangerment Assessment Report for the Off-Post Operable Unit.

The Army declines to adopt Shell's opposition to the use of 14,300 and 17,500  $\mu$ g/l (45 Fed. Reg. 79340) as potential ARARs for the reasons set forth above in response to Shell's general comments on AWQC.

## 66. Shell Comments on 1,1,1-Trichloroethane:

#### PROPOSED GROUNDWATER ARAR:

Shell disagrees with the Army proposal of 200  $\mu$ g/l based on 40 CFR § 141.50 as an ARAR for the reasons set forth above in the discussion of MCLGs.

#### PROPOSED SURFACE WATER ARAR:

Shell disagrees that the MCL for this chemical should be selected as an ARAR because it is driven by CAG methodology.

## Response to Shell Comments on 1,1,1-Trichloroethane:

In this appendix, the Army has only designated potential ARARs for 1,1,1-Trichloroethane. Whether these potential ARARs merit selection as ARARs will be determined in the context of the Feasibility Study/Endangerment Assessment Report for the Off-Post Operable Unit.

The Army declines to adopt Shell's opposition to 200  $\mu$ g/l (40 C.F.R. § 141.50) as a potential ARAR for the reasons set forth above in response to Shell's general comments on MCLGs.

While the Army understands Shell's CAG-related concerns, as explained in the Army's response to Shell's general comments, reassessment of the merits of the CAG methodology is a national EPA issue that must be resolved by EPA in the first instance. If EPA determines to modify the CAG methodology during the course of the Off-Post RMA RI/FS, such modification(s) will be applied in each pertinent instance to the substances identified herein.

## 67. Shell Comments on Trichloroethylene:

#### PROPOSED GROUNDWATER ARAR:

Shell disagrees with the Army proposal of 5  $\mu$ g/l based on 40 CFR § 141.61(a) as an ARAR for the reasons set forth above in the discussions of CAG methodology and proposed standards.

Shell disagrees with the Army proposal of 27  $\mu$ g/l (10<sup>5</sup>) based on 45 Fed. Reg. 79341 as an ARAR for the reasons set forth above in the discussion of CAG.

#### PROPOSED SURFACE WATER ARAR:

Shell disagrees with the Army proposals or  $45,000 \mu g/l$  and  $27 \mu g/l$  ( $10^{5}$ ) based on 45 Fed. Reg. 79341 as ARARs for the reasons set forth above in the discussion of CAG.

#### Response to Shell Comments on Trichloroethylene:

In this appendix, the Army has only designated potential ARARs for Trichloroethylene. Whether these potential ARARs merit selection as ARARs will be determined in the context of the Feasibility Study/Endangerment Assessment Report for the Off-Post Operable Unit.

While the Army understands Shell's CAG-related concerns, as explained in the Army's response to Shell's general comments, reassessment of the merits of the CAG methodology is a national EPA issue that must be resolved by EPA in the first instance. If EPA determines to modify the CAG methodology during the course of the Off-Post RMA RI/FS, such modification(s) will be applied in each pertinent instance to the substances identified herein.

## 68. Shell Comments on Xylene

#### PROPOSED GROUNDWATER ARAR:

Shell disagrees with the Army proposal of a narrative standard based 40 CFR § 180.1025(c) as a potential ARAR for the reasons set forth above in the discussion of TPCRAC.

#### PROPOSED SURFACE WATER ARAR:

Shell disagrees with Army proposal of a narrative standard based on 40 CFR § 180.1025(c) as a potential ARAR for the reasons set forth above in the discussion of TPCRAC.

## Response to Shell Comments on Xylene:

In this appendix, the Army has only designated potential ARARs for Xylene. Whether these potential ARARs merit selection as ARARs will be determined in the context of the Feasibility Study/Endangerment Assessment Report for the Off-Post Operable Unit.

The Army declines to adopt Shell's position because the designation of 40 C.F.R. § 180.1025(c) as a potential ARAR is not inconsistent with CERCLA, the NCP and EPA guidance not inconsistent with CERCLA and the NCP.

## Shell Comments on (69) Zinc and (70) Zinc Oxide:

#### PROPOSED SURFACE WATER ARAR:

Shell tentatively agrees with the Army proposal of the AWQC (Aquatic Life) standard (24 hr: 47  $\mu$ g/l; max: e(0.83 [In hardness)] -1.90) as a potential ARAR.

## Response to Shell Comments on (69) Zinc and (70) Zinc Oxide:

In this appendix, the Army has only designated potential ARARs for Zinc and Zinc Oxide. Whether these potential ARARs merit selection as ARARs will be determined in the context of the Feasibility Study/Endangerment Assessment Report for the Off-Post Operable Unit.

Shell's comments expressing tentative agreement with the Army's initial determination of potential ARARs for Zinc and Zinc Oxide in surface water requires no further discussion in this context.

## C. SHELL MISCELIANEOUS COMMENTS ON APPENDIX H

## Shell Miscellaneous Comment No. 1:

Appendix H, page iii, second paragraph - Change "criterium" in the fourth line to "criterion."

## Response to Shell's Miscellaneous Comment No. 1:

The requested change has been made.

#### Shell Miscellaneous Comment No. 2:

Appendix H, page iv, second paragraph - Is the reference to "this volume" in the second sentence an error?

## Response to Shell's Miscellaneous Comment No. 2:

The reference has been changed to "this appendix" for greater clarity.

## Shell Miscellaneous Comment No. 3:

Appendix H, page iv, fourth paragraph - The last line should be corrected to refer to Section 121(d) of CERCLA, 42 U.S.C. § 9621(d), since the selection process may include waiver under Section 121(d)(4). See, for example, the last sentence in paragraph 16.59 of the RI/FS Process Document.

## Response to Shell's Miscellaneous Comment No. 3:

The requested change has been made for greater clarity.

## Shell Miscellaneous Comment No. 4:

Appendix H, page viii - the first word should be "levels," not "limits."

## Response to Shell's Miscellaneous Comment No. 4:

The requested change has been made.

## Shell Miscellaneous Comment No. 5:

Appendix H, page iii, second paragraph - Change "CDH" in the fifth line to "the State," since it is the State that is to identify State ARARs under Section 121(d)(2)(A)(ii) of CERCLA.

## Response to Shell's Miscellaneous Comment No. 5:

The requested change has been made.

## Shell Miscellaneous Comment No. 6:

Appendix H, page ix. second paragraph - Change "work" in the first line to "worker."

## Response to Shell's Miscellaneous Comment No. 6:

The requested change has been made.

## Shell Miscellaneous Comment No. 7:

Shell supports the Army's decision to address worker protection standards separately from the ARAR selection process. As we have commented in the past, Shell supports the application of worker protection standards, but believes that those standards should not be confused with ARARs.

## Response to Shell's Miscellaneous Comment No. 7:

Shell's agreement with the Army on this matter requires no further discussion in this context.

## COLORADO ARAR COMMENTS

## Colorado Comment No. 26:

Appendix H, page vi. The text should include 5 CCR 1001-2 through 5 CCR 1001-10 as potential air ARARs.

## Response to Colorado Comment No. 26:

The Army is unable to determine from presently available information whether any of these standards were properly promulgated and generally applicable and thus none of the referenced regulations have been identified at this time as potential State ARARs. In order for the Army to determine whether the referenced standards qualify as potential ARARs, the State is requested to provide to counsel for the Army:

- (a) Specific citations to the generally referenced State air standards;
- (b) Proof of promulgation of the referenced State air standards (including opportunity for notice and comment by the public) with a brief description of the promulgation process followed by the State;

- (c) Copies of pertinent rulemakings or preambles to the regulations:
- (d) Copies of all relevant Colorado Attorney General Opinions interpreting these regulations and any relevant Colorado Department of Health guidance documents;
  - (e) Copies of any relevant judicial or administrative determinations;
- (f) A description of all relevant circumstances for each instance where the State has similarly construed or applied these air regulations for sites in Colorado; and
- (g) Any other documents that the State believes support its position that the referenced State air regulations qualify as State ARARs for the CERCLA cleanup of the Off-Post RMA Operable Unit because these regulations constitute promulgated, generally applicable State standards, requirements, criteria or limitations under a State environmental or facility siting law that is more stringent than any federal standards, requirements, criteria or limitations.

## Colorado Comment No. 27:

Appendix II, page vi. The text should include the following potential groundwater ARARs:

- Colorado Basic Standards for Groundwater, 5 CCR 1002-8, Section 3.11.0 et seq. (in particular Tables 1, 2, and 3).
- Colorado Basic Standards and Methodologies, 5 CCR 1002-8, Section 3.1.0 et seg. (in particular Section 3.1.11).

## Response to Colorado Comment No. 27:

The Army is unable to determine from presently available information whether any of these standards were properly promulgated or could effectively result in the statewide prohibition of land disposal of hazardous substances, pollutants or contaminants (where the State standards are not of general applicability or adopted by formal means, or where the State standards were not adopted on the basis of hydrologic, geologic or other relevant considerations). In order for the Army to determine whether the reterenced standards qualify as potential State ARARs, the State is requested to provide to counsel for the Army:

- (a) Specific citations to the generally referenced groundwater standards;
- (b) Proof of promulgation of the referenced State groundwater standards (including opportunity for notice and comment by the public) with a brief description of the promulgation process followed by the State;

- (c) Copies of pertinent rulemakings or preambles to the regulations;
- (d) Copies of all relevant Colorado Attorney General Opinions interpreting these regulations and any relevant Colorado Department of Health guidance documents:
  - (e) Copies of any relevant judicial or administrative determinations;
- (f) A description of all relevant circumstances for each instance where the State has similarly construed or applied these groundwater regulations for sites in Colorado; and
- (g) Any other documents that the State believes support its position that the referenced State groundwater regulations qualify as State ARARs for the CERCLA cleanup of the Otf-Post RMA Operable Unit because the regulations constitute promulgated, generally applicable State standards, requirements, criteria or limitations under a State environmental or facility siting law that is more stringent than any federal standards, requirements, criteria or limitations.

## Colorado Comment No. 28:

Appendix H, page viii. Contrary to the statement in the text, the State has identified promulgated chemical-specific ARARs for RMA on several occasions. In particular, the State identified ARARs on January 6, 1987, March 7, 1987, and most recently on July 18, 1988. The Army has consistently ignored all promulgated State statutes and regulations. This practice is inconsistent with U.S. EPA actions at Colorado CERCLA sites and is not consistent with Section 121(d) of CERCLA. To the extent the State promulgated standards are more stringent than the federal standards, the State standards must be met. Attachment I contains State identified chemical-specific standards (ARARs).

## Response to Colorado Comment No. 28:

Although the State has identified on each of the referenced occasions standards that it characterizes as State ARARs, the State has failed, to date, to meet its burden under 42 U.S.C. § 9621(d)(2)(A)(ii) and (C) to show that these standards warrant treatment as potential State ARARs. The Army is unable to determine from presently available information whether these standards were properly promulgated or could effectively result in the statewide prohibition of land disposal (where the standard is not of general applicability or adopted on the basis of hydrologic, geologic or other relevant considerations).

Until such time as the State provides to counsel for the Army sufficient information to establish that the State standards merit consideration as potential ARARs, the Army will not treat them as such.

## **COLORADO ATTACHMENT 1**

# STATE IDENTIFICATION OF ADDITIONAL CHEMICAL-SPECIFIC ARARS FOR OFF-POST OPERABLE UNIT AT RMA

## REFERENCE

- (1) Colorado Basic Standards for Groundwater, 5 CCR 1002-8, Section 3.11.0--3.11.9 (in particular Tables 1, 2, and 3).
- (2) Colorado Basic Standards and Methodologies, 5 CCR 1002-8, Section 3.1.0--3.1.20 (in particular Section 3.1.11).
- (3) Federal Safe Drinking Water Act (in particular Maximum Contaminant Level Goals--MCLGs).
- (4) Federal Safe Drinking Water Act (in particular Maximum contaminant Levels—MCLs).
- (5) Federal Clean Water Act (in particular Water Quality Criteria for Protection of Human Health).

Chemical	Abbreviation	Water Quality Standard (Reference) all values in µg/l
Aldrin	ALDRN	0(2) 0.000074(5)
Arsenie	AS	50(1) 50(4)
Benzene	C6H6	0(3) 5(4)
Carbon tetrachloride	CCL4	0(3) 5(4)
Chloride	CL	250,000(1)
Chlorobenzene	CLC6H5	0(2)
Chloroform .	CHCL3	.19(5)
Chiorophenylmethyl sulfide	CPMS	0(2)
Chlorophenylmethyl sulfone	CPMSO2	$\theta(2)$
Chlorophenylmerhyl sulfoxide	CPMSO	0(2)

Chemical	<u>Abbreviation</u>	Water Quality Standard (Reference) all values in µg/l
Chromium	CR	50(1) 1.2(3)* 50(4)
Copper	CU	200(1) 1300(3)*
Dibromochloropropane	DBCP	0(2) 0(3)
Dichlorobenzenes	CL2BZ	75(3) 74(4)
Dichlorodiphenylethane	PPDDE	0(2)
Dichlorodiphenyltrichloroethane	PPDDT	0(2)
1,1-Dichloroethane	IIDCLE	0(2)
1,2-Dichloroethane	12DCLE	0(3) 5(4)
1,2-Dichloroethylene	12DCE	0(2)
2,4-Dichlorophenoxyacetic acid	24D	7(3) 100(4)
Dicyclopentadiene	DCPD	0(2)
Dieldrin	DLDRN	0(2) 0.000071(5)
Diisopropylmethyl phosphonate	DIMP	0(2)
Dimethylmethylphosphate	DMMP	0(2)
Dithiane	DITH	0(2)
Endrin	ENDRN	0.2(1) 0.2(4)
Ethylbenzene	ETC6H5	0(2) 680(3)*
Fluoride	F	4000(1) 4000(4)
Iron	FE	300(1)
Isodrin	ISODR	0(2)
Lead	PB	50(1) 20(3)* 50(4)
Mercury	HG	2(1) 2(4)
Methylene chloride	CH2CL2	0(2)
Nitrite	NIT	1000(1)
Nitrate		10,000(1) 10,000(4)
Oxathiane	OXAT	0(2)
pH	PH	6.58.5(1)
Sulfate	SO4	250,000(1)

Chemical	Abbreviation	Water Quality Standard (Reference) all values in µg/l
Tetrachloroethylene	TCLEE	0(2) 0(3)*
Toluene	MEC6H5	0(2) 2000(3)*
Trichloroethylene	TRCLE	0(3) 5(4)
All Unknowns	UNK	0(2)
All Other Organic Compounds		0(2)
Xylenes	XYLEN	0(2)
Zinc	ZN	500(1)

Proposed Maximum Contaminant Level Goals

## Response to Colorado Attachment 1:

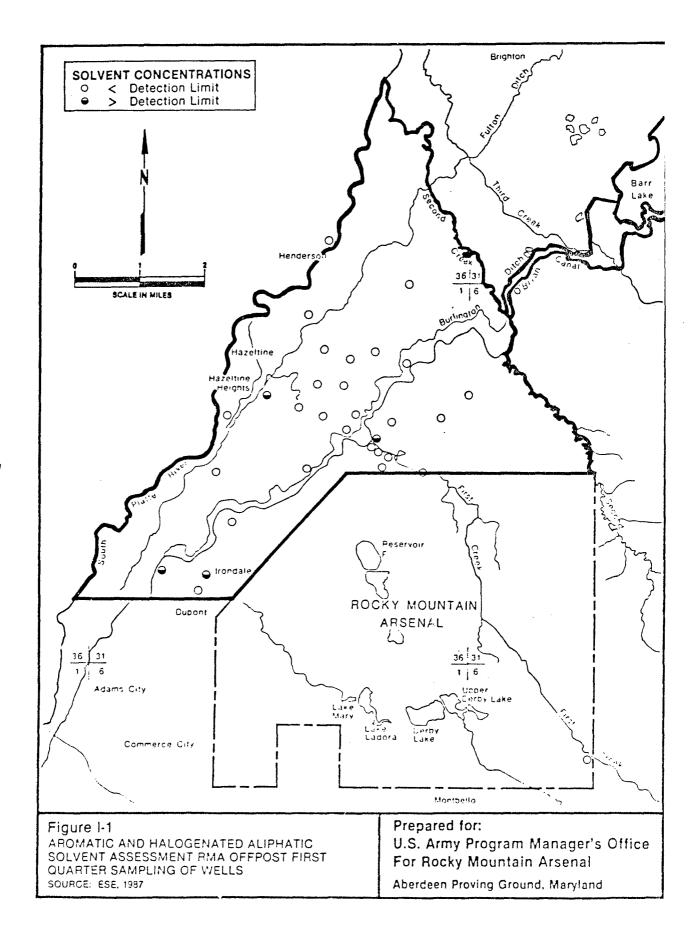
The State should be aware that the information provided in Colorado Attachment I is not helpful in aiding the Army to determine the existence of any potential State ARARs.

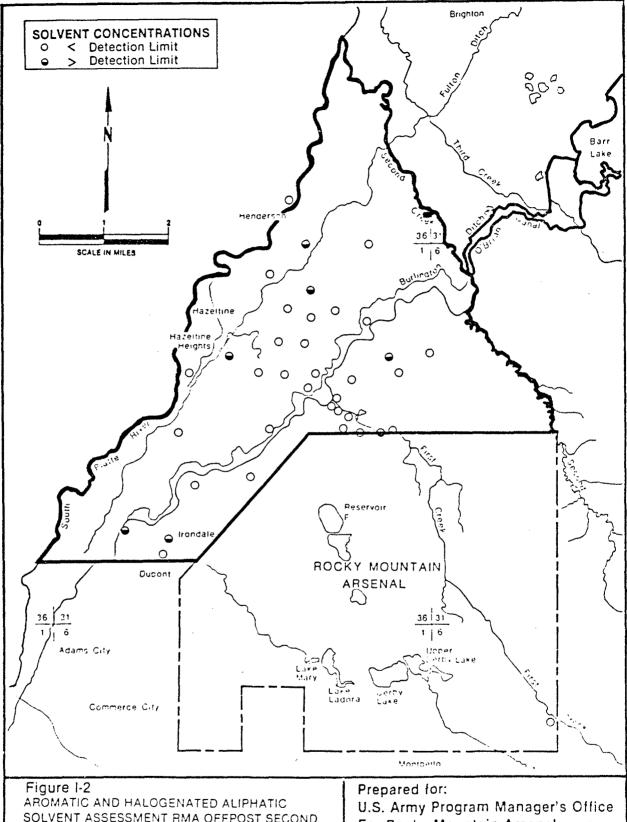
The Army is unable to determine from presently available information whether any of these State standards were properly promulgated or could effectively result in the statewide prohibition of land disposal of hazardous substances, pollutants or contaminants (where the State standards are not of general applicability or adopted by formal means, or where the State standards were not adopted on the basis of hydrologic, geologic or other relevant considerations). In order for the Army to determine whether the referenced standards qualify as potential State ARARs, the State is requested to provide to counsel for the Army:

- (a) Specific citations to the generally referenced groundwater standards;
- (b) Proof of promulgation of the referenced State groundwater standards (including opportunity for notice and comment by the public) with a brief description of the promulgation process followed by the State:
  - (c) Copies of pertinent rulemakings or preambles to the regulations;
- (d) Copies of all relevant Colorado Attorney General Opinions interpreting these regulations and any relevant Colorado Department of Health guidance documents;

- (e) Copies of any relevant judicial or administrative determinations:
- (f) A description of all relevant circumstances for each instance where the State has similarly construed or applied these groundwater regulations for sites in Colorado; and
- (g) Any other documents that the State believes support its position that the referenced State groundwater regulations qualify as State ARARs for the CERCLA cleanup of the Off-Post RMA Operable Unit because the regulations constitute promulgated, generally applicable State standards, requirements, criteria or limitations under a State environmental or facility siting law that is more stringent than any federal standards, requirements, criteria or limitations.

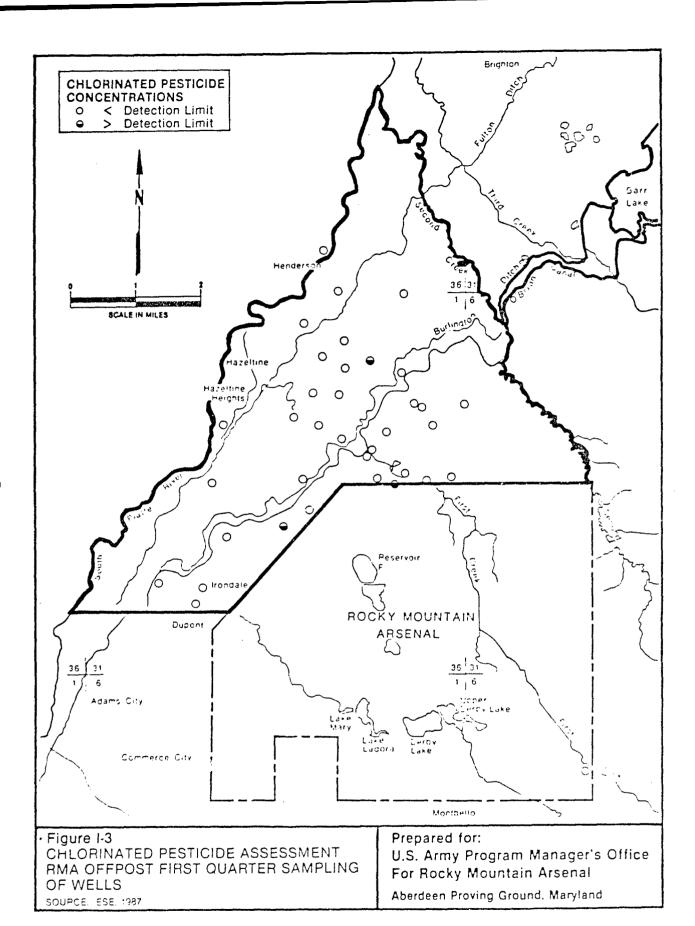
APPENDIX I
ANALYTICAL RESULTS OF OFFPOST CONTAMINATION ASSESSMENT
REPORTS, DISTRIBUTION MAPS

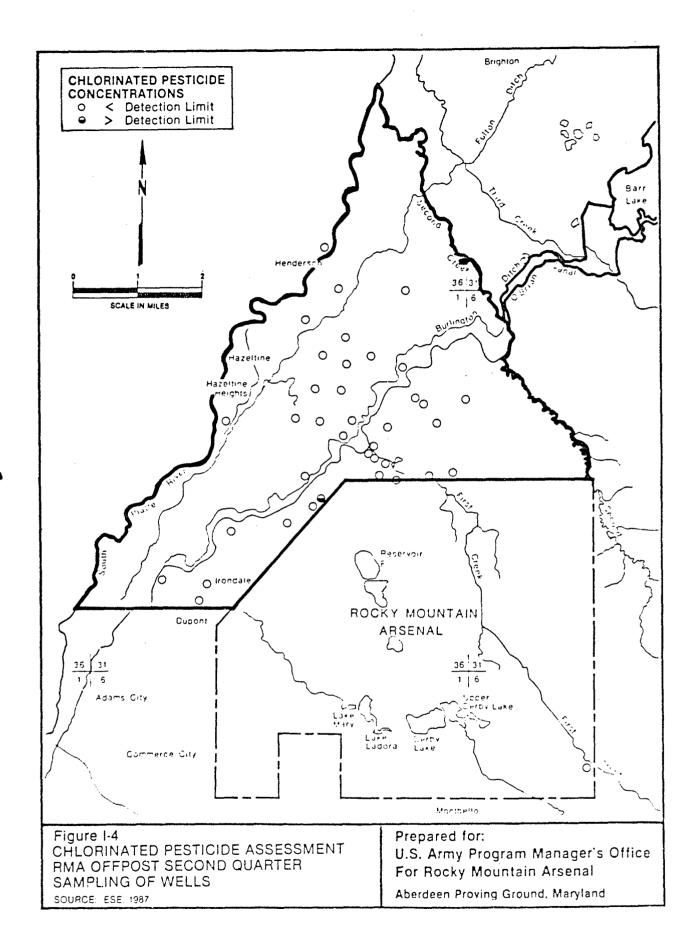


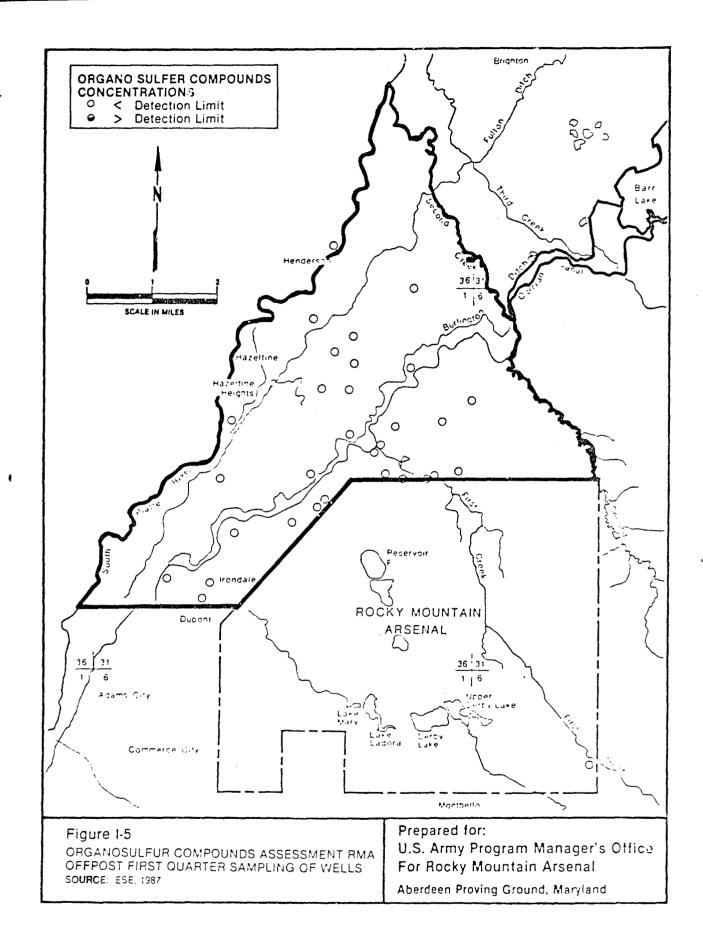


SOLVENT ASSESSMENT RMA OFFPOST SECOND QUARTER SAMPLING OF WELLS SOUPCE: ESE, 1987

For Rocky Mountain Arsenal Aberdeen Proving Ground, Maryland



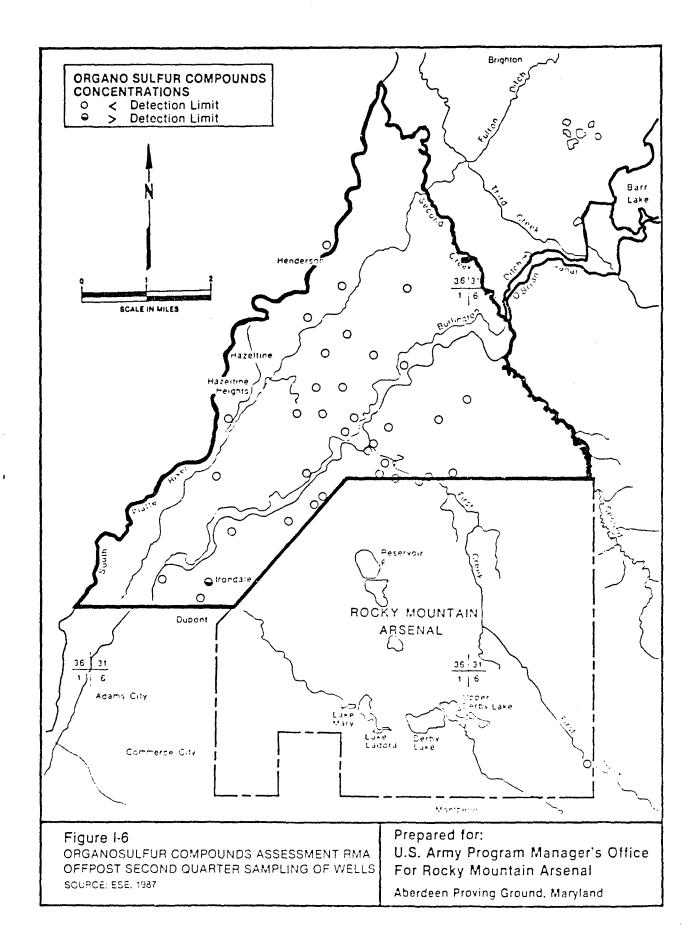


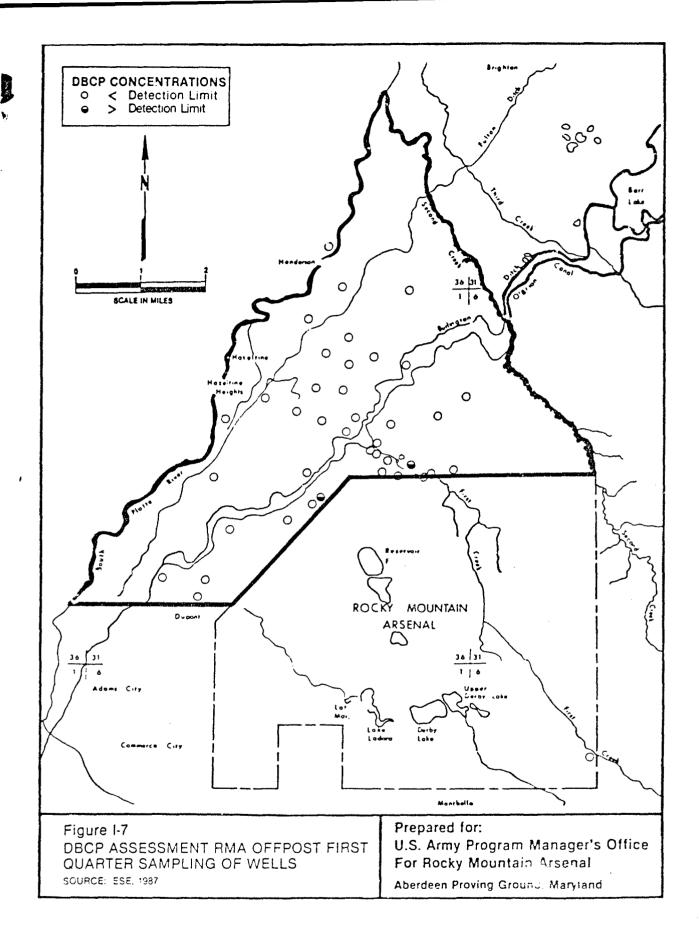


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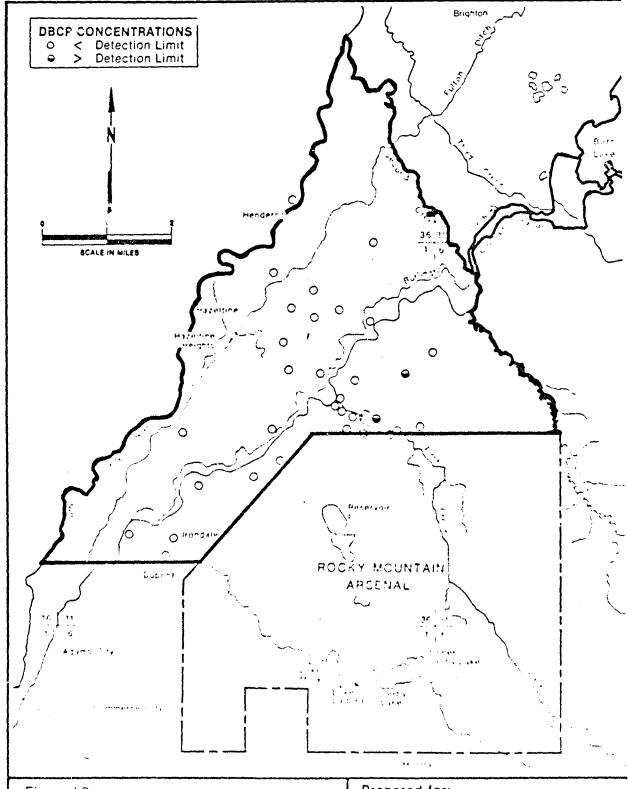


Figure 1-8
PSCP ASSESSMENT RMA OFFPOST
SECOND QUARTER SAMPLING OF WELLS
WORKE FACTOR

Prepared for: U.S. Army Program Manager's Office For Rocky Mountain Arsenal

Aberdeen Proving Ground, Maryland

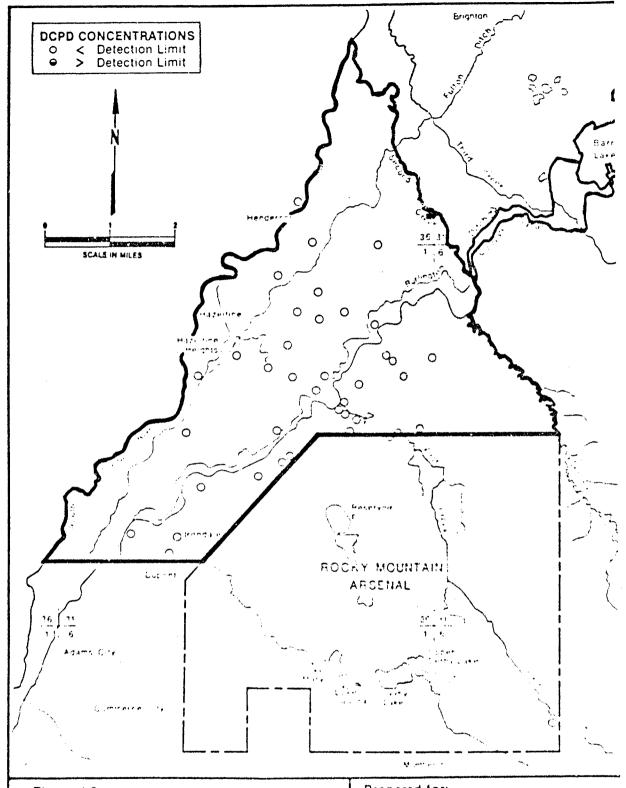


Figure 1-9
DCPD ASSESSMENT RMA OFFPOST FIRST QUARTER SAMPLING OF WELLS

SOURCE ESPINAT

Prepared for:

U.S. Army Program Manager's Office For Rocky Mountain Arsenal

Aberdeen Proving Ground, Maryland

#### APPENDIX J

COMMENTS AND RESPONSES TO THE OFFPOST OPERABLE UNIT REMEDIAL INVESTIGATION AND CHEMICAL SPECIFIC APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS. DRAFT FINAL REPORT (VERSION 2.1), AUGUST 1988

The Task 39 Offpost Operable Unit Remedial Investigation and Chemical Specific Applicable or Relevant and Appropriate Requirements Draft Final Report was distributed on September 30, 1988 to all Organizations and the State (OAS). Comments were received from the Colorado Department of Health on November 3, 1988; the U.S. Environmental Protection Agency on Movember 14, 1988; Shell Oil Company on November 14, 1988; Holme, Roberts & Owen on Movember 14, 1988; and the U.S. Fish and Wildlife Service on November 14, 1988. All written comments and formal responses are incorporated in the following appendix.



# UNITED STATES ENVIRONMENTAL PROTECTION AGENCY REGION VIII

## 999 18th STREET - SUITE 500 DENVER, COLORADO 80202-2405

Ref: 8HWM-SR

NOV 14 1950

Mr. Donald L. Campbell,
Deputy Program Manager
Office of the Program Manager
Rocky Mountain Arsenal
ATTN: AMXRM-TO
Commerce City, Colorado 80022-2180

Re: Rocky Mountain Arsenal, (RMA), Offpost Operable Unit Remedial Investigation and Chemical Specific Applicable or Relevant and Appropriate Requirements Draft Final Report, August, 1988.

Dear Mr. Campbell:

We have reviewed the above referenced report and have the enclosed comments. Please contact me at (303) 293-1528, if there are questions on this matter.

Sincerely yours,

Connally Mears

EPA Coordinator
for Rocky Mountain Arsenal Cleanup

Enclosure

CG: Thomas P. Looby, CDH
David Shelton, CDH
Patricia Bohm, CAGO
Lt. Col. Scott P. Isaacson
Chris Hahn, Shell Oil Company
R. D. Lundahl, Shell Oil Company
David Anderson, Department of Justice

## RESPONSES TO EPA COMMENTS ON REMEDIAL INVESTIGATION FOR OFFPOST OPERABLE UNIT

December 13, 1988

#### COMMENT

1. Page 3-56, Aldrin and isodrin, observed at concentrations exceeding CRLs, were not addressed here, but were addressed in the endangerment assessment. Why:

#### RESPONSE

Aldrin and isodrin were not detected offpost in the Spring and Summer 1987 sampling quarters. The remedial investigation (RI) focused on these two quarters because they were by far the most comprehensive sampling events conducted at the time the report was prepared. However, aldrin was detected sporadically at low levels (generally near the certified reporting limit (CRL)) in samples collected from offpost wells during 1985, 1986, and the winter of 1987. Thus, we believe the endangerment assessment (EA) must address aldrin even though the most recent sampling events do not indicate aldrin's presence at detectable levels offpost. Offpost data from previous sampling episodes is provided in the Contamination Assessment Report (CAR), and the Draft Final Water Remedial Investigation which will be released in January.

With respect to isodrin, the text is in error. Isodrin has not been detected in offpost wells since the Revision III- $360^{\rm O}$  Program began monitoring in December of 1965. Thus, isodrin will be deleted from the Offpost Remedial Investigation (RI) text and will not be discussed in the EA.

#### CCMMENT\_

2. Page 3-67. Section 3-3-1-9, third sentence, insert "were" for "ere".

#### RESPONSE

The text will be changed to correct this typographical error.

#### COMMENT

3. Page 3-114. For chloroform, DIMP, CPMSO, and CPMSO<sub>2</sub>, "systematic deviations" between GC and GC MS results were noted. It is stated that "these deviations could result in unforeseen problems associated with remedial actions". Text should be revised to describe more fully this systematic difference in concentration between GC and GC/MS methods.

#### RESPONSE

The "systematic differences" for chloroform, DIMP, CPMSO, and CPMSO $_2$  are described on the last paragraph of page 3-109. The relationship between GC and GC/MS results was not evaluated statistically because the number of samples in which these compounds were detected were relatively small and the concentrations were low (generally in the range of 10 to 20 %g/l).

# COMMENT

4. Page 3-132. First paragraph, last sentence, the second "in" should be "is".

# RESPONSE

The text will be changed to correct this error.

#### COMMENT

5. Page 3-143. First sentence, first paragraph, delete the "8".

#### RESPONSE

The text will be revised to make this correction.

# COMMENT

6. Page 3-148. Are projected quantities used in scenario development consistent with South Adams County Water and Sanitation District projections?

# RESPONSE

Yes. Each of the two alluvial wells is to pump approximately 400 acrefeet/year (ac-lt/yr) and the recharge is to be 1000~ac-ft/yr. So far in 1988. South Adams County has recharged approximately 800 ac-ft. Also, South Adams County only proposes to add two new production wells in the near future. The text will be revised to reflect these facts.

#### COMMENT

7. Page 3-149. Section 3.5.4.1. last paragraph, first sentence, replace "area" with "are".

### RESPONSE

The text will be revised to make this correction.

# COMMENT

 $\theta_{\rm t}=$  Page 3-151. Section 3-5-4-3, first paragraph, last sentence, is the value, 29 ug/1, correct?

#### RESPONSE

No, this value should be 20 % g/1. The text will be revised to make this correction.

#### COMMENT

9. Page 4-20, Third paragraph, the potential exists for overland flow near First Creek in which backwater could (or could have) accumulate and overtop 96th Avenue contributing to offpost surface water and soil contamination from cont: minated areas such as the Toxic Storage Yard or ditches leading from the North Plants or the Sewage Treatment Plant. Recent citizen accounts have indicated that such events may well have occurred. The RI should address the potential for past flood events depositing contaminated sediment outside of stream channels along the First Creek, and other potential pathways. The same type of concern exists regarding dieldrin detections in the O'Brian Canal (see page 5-14). Further, the flow of contaminated groundwater in that area could have lead, or now be leading, to soil contamination, as could the use of groundwater for irrigation (see comment regarding page 1-7, below). It is essential that such possibilities be fully evaluated.

#### RESPONSE

The Army has also become aware of citizen accounts which indicate that flooding events have created backwater at 96th Avenue and that surface water flow may have overtopped 96th Avenue. Although monitoring of First Creek at the RMA North Boundary indicates this surface water is generally uncontaminated, storm event sampling has not been initiated until recently. Thus, the Army recognizes the importance of evaluating the potential for soil contamination outside the First Creek stream channel and has initiated soil sampling and analysis to help investigate this potential pathway. The Army will be glad to discuss this supplemental program with the EPA at your request and recommendations you may have for further sampling. This data will be provided in an addendum to the RI Report and will be evaluated in an addendum to the EA/FS if unacceptable contaminant exposures as a result of this pathway are indicated.

There are several different issues raised by the other potential pathways mentioned in this comment. First, the detection of dieldrin in O'Brian Canal upgradient of First Creek does not appear related to ground water contamination. The bottom of O'Brian Canal is approximately 20 it above the water table in the area this sample was collected.

The statement. "The same type of concern exists regarding dieldrin detections in the O'Brian Canal" is interpreted to refer to overland flow from the RMA Northwest Boundary as a potential pathway. As discussed on pages 4-19 and 4-20, there is a potential for overland flow at the RMA Northwest Boundary during severe storm events. However, modeling conducted by the Corps of Engineers (COE) indicates that during a 100-year storm the Basin F drainage basin would not overflow. Since this drainage basin

contains the source areas closest to the RMA Northwest Boundary, erosion of contaminated soils to O'Brian Canal via this pathway appears unlikely. However, the Army will be willing to discuss specific recommendations for soil sampling downgradient of the RMA Northwest Boundary if the EPA believes this is or has been a viable contaminant pathway to O'Brian Canal.

Soil contamination, as a result of the use of ground water for irrigation, has been evaluated as a potential pathway in the EA.

# COMMENT

10. Pages 5-11 and 9-4. Reference i. made to past disposal of Denver wastewater sludge in Barr Lake. When did this occur? What quantities were disposed and what was the source? Are there records of the chemical composition of the wastewater sludge that support your assertion that the sludges are the source of the heavy metals detected in the sediments?

#### RESPONSE

The disposal of sludge by Denver Metro occurred in the 1950s and early 1960s. The sludge was placed directly into O'Brian Canal. We were not able to find documentation of what quantities were disposed. We do not feel it is necessary to have documentation of the chemical composition of the wastewater sludge. The presence of heavy metals in wastewater sludge is well documented in the literature. Ms. Carol Leafure with Barr Lake State Park was the source of much of our information.

#### COMMENT

11. Page 1-4. The area between 60th Avenue and areas downgradient of the Northwest Boundary Control System (NWBC3) have been excluded from the off-post RI. Historic information indicates that the DBCP plume currently intercepted by the Ironaale Boundary Control System extended into the off-post area. This same area is downgradient of the TCE plume that originates on-post in the West Tier area of RMA. The effects of operating the Ironaale system on both the TCE and DBC2 plumes should be addressed in a manner similar to the other two boundary control systems.

# RESPONSE

The statement that the "area between 80th Avenue and areas downgradient of the Northwest Boundary Control System (NWBCS) have been excluded from the offpost RI" is misleading. The Army has presented extensive monitoring data in this area from the Consumptive Use Phase I and III Programs and continues to monitor dedicated monitoring wells in this area on a routine basis. Full size chemical distribution maps that incorporate this part of the Offpost Operable Unit are available upon request.

These maps were not in the RI report because general contaminants were not detected outside the areas shown on the maps in the RI report.

None of the recent monitoring programs mentioned above have indicated that DBCP, a compound solely related to RMA, continues to persist in this area. However, trichloroethylene (TRCLE) has been sporadically detected. Because there are documented sources of TRCLE to the south of 80th Avenue that are not associated with RMA, the contamination downgradient of the Irondale System can not be traced to a specific source. Because multiple sources are indicated, the EPA should be the lead agency for this area in accordance with Executive Order No. 12580, 52 CFR 2923 (1987). Thus, discussions of the operational effects of the Irondale System on these contamination plumes need not be as detailed as those provided on the North Boundary Containment System (NBCS) and Northwest Boundary Containment System (NWBCS). However, additional discussion will be provided in Section 3.0 of the RI report where the effects of the other two systems are discussed.

#### COMMENI

12. Page 1-7. The potential for contamination of soil by application of contaminated irrigation water at present or in the past should be addressed by identifying all potential irrigation wells that lie within plume areas. If historic application of ground water contaminated with persistent compounds appears likely, then examination of the potential for soil contamination should be conducted and presented for use in the off-post endangerment assessment.

# RESECUSE

The potential for soil contamination via this pathway is being considered by the EA. Irrigation wells that lie within present or historic plumes were identified as a part of the Consumptive Use Programs. The majority of these wells lie downgradient of O'Brian Canal and Burlington Ditch where ground water contaminant concentrations are greatly diminished relative to concentrations closer to the RMA boundary. Nonetheless, the relevant data on irrigation wells is presented again in the EA and this pathway is being evaluated in the exposure assessment.

#### TUEMMOD

13. Page 3-48. Two wells were identified with casing in poor condition that may lead to mixing of alluvial and bedrock water. The potential for wells of this type to provide a pathway for migration of contaminated ground water to Denver Formation or Arapahoe Formation aguifers should be addressed.

### RESPONSE

The Army agrees that the potential for this pathway needs to be addressed. Currently, the only two Consumptive Use bedrock wells that have shown contamination were the two wells identified in the RI report. The Army believes that the best method of detecting potential cross-contamination problems between aquifers is to monitor bedrock wells on a regular basis. When poorly constructed bedrock wells are identified in areas where alluvial water is contaminated above remedial action levels, the wells will be

abandoned and replaced as necessary. Both monitoring and abandonment/ replacement of bedrock wells will be a part of alternatives developed in the FS.

It should be noted that the highest density of bedrock wells are located just north of the RMA North Boundary. During the Consumptive Use Phase I program, analyses of samples collected from these wells did not exhibit any concentrations of target analytes above Certified Reporting Limits (CRLs).

#### COMMENT

14. Page 3-49. The off-post impact of at least the DBCP plume and potentially the RMA-related TCE plume from the West Tier should be addressed. We need to discuss this issue further.

#### RESPONSE

As discussed in our response to Comment #11, the most recent monitoring (Consumptive User Phase III) in the offpost area downgradient of the Irondale System did not indicate the presence of DBCP. Data from the Consumptive Use Phase III Report will be discussed in the RI report to support this position. We agree that this issue requires further discussion.

#### COMMENT

15. Page 3-5%. The historic DBCP plume that led to construction of the Irondale System should be addressed.

#### RESPONSE

We agree that discussion of the historic DBCP plume and the rationale for construction of the Irondale System are appropriate in this section of the report. An appropriate discussion will be added to the text.

# COMMENT

16. Page 3-63. The concentration of dieldrin identified as anomalous lies in an area of sparse well control and is along a potential flow path downgradient of elevated dieldrin concentrations on-post. Recharge from the O'Brian Canal and Burlington Ditch have probably diluted the concentrations in the plume.

#### RESPONSE

The text does not refer to the dieldrin concentrations observed in samples from Wells 37353 and 37355 as anomalous. The text states that the detection of dieldrin do not correlate well with upgradient detections. In the case of both Wells 37353 and 37355, there are at least a half dozen upgradient wells which do not exhibit detectable levels of dieldrin. In neither case however, are we ruling out that this contamination could be attributable to

RMA. We are in agreement that these detections are in areas of sparse well control and downgradient of dieldrin contamination near the RMA boundaries. Thus, monitoring will continue in these areas under the Comprehensive Monitoring Program (CMP) and the need for additional wells upgradient of these areas will be evaluated to help assess the origins of these detections.

#### COMMENT

17. Page 3-147. At least a rudimentary calibration attempt for contaminants of concern for the future scenario simulations should be conducted to validate the future predictions. In particular, the extreme variation in Kd should be validated by calibration since this parameter is a major control on future contaminant concentration distribution.

#### RESPONSE

We agree that the variability in Kd values has a major influence on the results of the "no action" simulations, particularly for the relatively immobile compounds such as dieldrin. However, even a rudimentary calibration for the contaminants of concern offpost is difficult because historical offpost data is much less comprehensive than presented in the RI report. As a result, we are not able to reconstruct offpost contaminant distributions with any certainty. As an alternative, we propose to perform "no action" simulations for different Ed values to evaluate the sensitivity of the results of this variable. Our preliminary results suggest that the "no action" simulations are not very sensitive to different Kd values for the extremely mobile compounds such as chloroform and DIMP. A "best estimate" Kd will be determined for dieldrin based upon travel times from onpost source areas. Then, two additional Kd values will be chosen for modeling. One of these values will be selected less than the "best estimate" Kd and one will be selected greater than this value. The purpose of these simulations will be to bracket the actual movement of dieldrin by providing a reasonable range of contaminant migration scenarios. The results of these additional simulations will be provided in the EA/FS Report.

Volume III

# COMMENT

1. ARARs were not identified for the following compounds detected in the offpost sampling: chlordane, hexachlorocyclopentadiene, and 1,1,2- trichloroethane.

# RESPONSE

These contaminants were not detected offpost in 1937. We do not have any indication that chlordane has ever been detected offpost. Hexachlorocyclopentadiene and 1.1.2-trichloroethane have been detected once and twice respectively since monitoring began for these contaminants offpost. All three of these detections were just above the respective CRL-

We will however identify potential ARARs for these two compounds in the event that they are detected offpost in the future. (Will require DOJ concurrence)

#### COMMENT

2. Although we normally think it most appropriate for the State of Colorado to comment on potential State ARARs, in light of recent RMA experience with State air pollution regulations we would point out that State odor regulations, and perhaps others, should be considered as potential ARARs.

# RESPONSE

State odor regulations are not environmental regulations that constitute standards, requirements, criteria or limitations pertinent to hazardous substances, pollutants or contaminants. Therefore, these regulations have not been designated as potential ARARs within the meaning of 42 U·S·C· Section 9621(d)(2).

#### COMMENT

3. We have not had the opportunity to make a full compound-specific comparison with potential ARARs. We may supplement our comments on that matter at a later time.

#### RESPONSE

The organizations are urged to make any supplemental comments on the designated potnetial ARARs no later than January 20, 1989 so that any such additional comments on ARARs may be considered by the Army prior to the issuance of the Offpost Operable Unit EA/FS.



# United States Department of the Interior

#### FISH AND WILDLIFE SERVICE COLORADO FIELD OFFICE 730 SIMMS STREET ROOM 292 GOLDEN, COLORADO 80401

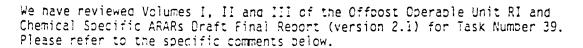
IN REPLY REFER TO:

(FWE)

November 11, 1988

Deputy Program Manager Rocky Mountain Arsenal ATTN: AMXRM-PM (Donald L. Campbell) Building 111 Rocky Mountain Arsenal Commerce City, Colorado 80022

Dear Mr. Campbell:



, Sec. 4.3 (b. 4-10). Two contaminant pathways to offpost surface water are listed: surface water runoff and erosion plus contaminated ground water discharges to surface channels. Soil and surface erosion by wind action is not mentioned. This is surprising because of the IRA that addressed supression of wind erosion problems in section 35. Is it not possible that surface/contaminant-borne soil and other particles have blown offpost and been deposited within the watersheds that feed back onto or away from the Arsenal? This could be examined with near-surface soil-core samples and testing for surface-borne analytes offpost. However, offpost soil studies conducted so far may have used a core depth great enough to swamp out detection of shallow/surface contamination. It is our contention that airporne surface erosion should be considered and examined at a level of detail which would renger it an insignificant factor or a significant factor. If it is snown to be significant, then a description of the process and its past, present and future immoacts on surface water contamination should be included in this section. The issue raised here could explain why aldrin and DIMP concentrations were detected in surface waters of First Creek at the southeastern-most edge of RNA (sec. 4.2.1 p. 4-4, Table 4.2-1 and Fig. 4.2-1 for sample location 08ABD). Figure 4.3-2 would suggest that this contamination occurred via a recharge phenomenon; does the ground water move in this direction? We request that you consider whether or not surface airporne contaminants may have moved to some degree offpost (i.e., down wind). For this reason, we would be interested in any contaminant data you may have pertaining to offpost biota to the east, southeast and south of RMA (i.e., downwind) to help us judge this issue in relation to the contamination of fish and wilc'ife in the total offpost area.

Vol 1. Sec 6.0. The data presented in Tables 5.1-2. 5.2-1 and 5.3-1 are confusing. The latter table specifies the basis of expression is up metal/gm any sediment. The former two tables do not indicate the basis of expression, i.e., whether it is on a dry, wet or other basis. The methodology section

pertaining to these results (sec. 2.3, p. 2-24) specifies that the segment samples were centrifuged to remove excess water prior to extraction and analysis. Please provide us with an explanation for the basis of expression for all data in Sec. 5.0. Without this we have no valid way to assess the relevance of contaminant concentrations in offpost segments.

<u>Vol 1. Sec. 7.0.</u> Our concerns about studies of biota for this operable unit center around the general approach and the specific investigation, as well. First, there is no indication of studies of contaminants in biota that reside in the offpost operable unit. Rather, the studies focused entirely on movement of animals from onbost to offpost and the possible 'export' of contaminants in this manner. The movement studies indicated that pheasants, to a limited extent, and no cottontail rabbits could be expected to move back and forth across the RMA north boundar. We are concerned with the possibility that offpost contamination has resulted in contamination in offpost tiota that never comes onto RMA. Please provide some explanatory response to this concern.

The name indem of our comments about sec. 7.0 pentains to the movement studies.

<u>Vol 1, Sec. 7.1.</u> The title is misleading. Because no summer movements and wintertime movements of only one card were monitored, the title should read Results of Fall Movements. Home range implies year-round monitoring which was not done.

roll. Sec. 7.1.1. On p. 7-1, now was death from natural causes determined for pheasants found dismembered with the transmitter found hearby? Also, were any of the animal carcasses found intact with accompanying transmitters analyzed for contaminant concentrations? Transmitter effect on the natural movement of experimental pinds is never mentioned. Was there a period of adjustment to the stress daused by handling/radio-fitting afforded each animal before data were collected from it? We are aware of some studies in which transmitter effects on the animals totally negated the validative of movement data. Who placed a neward band on the bheasant recovered 7.5 miles from the Ansena? More details are needed on this. What does the term radio-collar mean? We are not familiar with collars used on birds. Usually a harness on tail of o type of radio attactment is used on birds. Sex should be indicated in Table 7.1-1. My was 10 locations used on birds. Sex should be indicated in Table 7.1-1. My was 10 locations used as the dutoff for walls (1) movement data itop s. 7-3.0 There was an aumitted relationship between number of locations and activity range, i.e., more locations vielded a larger range. Perhaps pheasants with smaller ranges exhibited a radio effect. If a radio effect existed, it was point in time after radio-fitting did it bease to be a factor? Fadio affect reeds to be consumnt in the discussion in this section, in data, 3, 5, 7, references could be given and dasual observations should be expounded upon. In data, 4, 5, 7-3, the first and last centance are contradictory. Leasons induced our processors could not be compared because only the processor.

and in two lines of the panal of the chairment about "the data obtained chowing an objective and quartitative pasts for elaborating potential pathways product learn to hand out there in the fice of admittad problems with the chady. And, as monthlynes above, contamination in represent thota origost is not presented. Tack of ela pathna on considering a potential racio effect outely weakens the negulity. Some studies have tours abendant clossyion and

restrictive movements exhibited by radio-fitted animhals. The interpretation at least warrants this consideration. The pheasant that moved 7.5 miles offpost was apparently not radio-fitted but it was reward-banded. Perhaps this bird is more representative than were the radio-fitted birds. If so, a reward-banding study could have been more enlightening. Also, the population of lost transmitters may have included animals that moved offpost. In para 2. p. 7-12, the draft Biota RI (ESE, 1988) should not be cited as a reference. It is not listed in the references and probably has not been released for our review yet.

In summary of Section 7.0, the discussion of findings in 7.2 asppears to present a fair and objective assessment of the limitations and findings of the radio-tracking studies. A stronger objinion about the strengths of the study is what is transmitted prior to this point, however. Lastly, the Evaluation of Biota Contaminant Pathways given in sec. 7.3 does not include mention of existing offpost contamination and its potential to contaminate offpost plants or animals.

<u>Volume II.</u> No comments.

<u>Volume III.</u> In Appendix H. p. vii, we would like to see listed in this section the tolerances and action levels on or in raw agricultural commodities that were indentified in para. 3. These data could be shown in the section on Potential Chemical-Specific ARARS for the EA for the Offpost Operable Unit, RMA.

Thank you for the opportunity to review the subject documents. For any questions pertaining to our comments, please contact Rod Deweese of this office at 303-336-2675 or FTS 776-2675.

Sincerely

Jehoy W. Carlson Acting State Supervisor

# RESPONSES TO FISH AND WILDLIFE SERVICE COMMENTS ON REMEDIAL INVESTIGATION FOR THE OFFPOST OPERABLE UNIT

December 13. 1988

#### COMMENT

Vol. 1. Sec. 4.3 (p. 4:10). Two contaminant pathways to offpost surface water are listed: surface water runoff and erosion plus contaminated ground water discharges to surface channels. Soil and surface erosion by wind action is not mentioned. This is surprising because of the IRA that addressed suppression of wind erosion problems in section 36. Is it not possible that surface/contaminant-borne soil and other particles have blown offpost and been deposited within the watersheds that feed back onto or away from the Arsenal? This could be examined with near-surface soil-core samples and testing for surface-borne analytes offpost. However, offpost soil studies conducted so far may have used a core depth great enough to swamp out detection of shallow/surface contamination. It is our contention that airborne surface erosion should be considered and examined at a level of detail which would render it an insignificant factor or a significant factor. If it is shown to be significant, then a description of the process and its past, present and future impacts on surface water contamination should be included in this section. The issue raised here could explain why addrin and DIMP concentrations were detected in surface waters of First Creek at the southeastern-most edge of RMA (sec. 4.2.1 p. 4-4. Table 4.2-1 and Fig. 4.2-1 for sample location OSADD). Figure 4.3-2 would suggest that this contamination occurred via a recharge phenomenon; does not ground water move in his direction? We request that you consider whether or not surface airborne contaminants may have moved to some degree offpost (i.e., downwind). For this reason, we would be interested in any contaminant data you may have pertaining to offpost blota to the east, southeast and south of RMA (1/e), downwind) to help us judge this issue in relation to the contamination of fish and wildlife in the total offpost area.

# RESPONCE

Bused upon a preliminary review of this pathway, the Army does not believe that the windblown pathway is a significant exposure route in the Offpost Operable Unit. To address your concern over this potential pathway the Army would first like to discuss the plausibility of the pathway by evaluating the reference for if to occur, for example, an evaluation could be effectively as successful by performing long-term fir dispersion and browston modeling. If the results of this approximent indicate the referrition for our formula successful describes as a guide. Again, we are willing to discuss your recommendations but sould also like to request other approximes to the evaluation of this potential pathway.

# COMMENT

Vol.\_I.Sec.\_5.0. The data presented in Tables 5.1-2, 5.2-1 and 5.3-1 are confusing. The latter tables specifies the basis of expression is ug metaligm dry sediment. The former two tables do not indicate the basis of expression, i.e., whether it is on a dry, wet or other basis. The methodology section pertaining to these results (Sec. 2.3, p. 2-24) specifies that the sediment samples were centrifuged to remove excess water prior to extraction and analysis. Please provide us with an explanation for the basis of expression for all data in Sec. 5.0. Without this we have no valid way to assess the relevance of contaminant concentrations in offpost sediments.

#### RESPONSE

All concentrations are expressed in terms of dry sediment. The text will be revised to clarify this.

# COMMENI

Yol. 1. Sec. T.Q. Our concerns about studies of biota for this operable unit center around the general approach and the specific investigation, as well. First, there is no indication of studies of contaminants in biota that reside in the Offpost Operable Unit. Rather, the studies focused entirely on movement of unimals from onpost to offpost and the possible export of contaminants in this manner. The movement studies indicated that pheasants, to a limited extent, and no cottontail rabbits could be expected to move back and forth across the RMA north boundary. We are concerned with the possibility that offpost contamination has resulted in contamination in offpost biota that never comes onto RMA. Please provide some explanatory response to this concern.

# RESPONSE

Offpost studies of other media (e.g., surface water, ground water) were being conducted simultaneously with the investigation of animals movements. We investigation of contamination in offpost biota were conducted because potential offpost sites of contamination (e.g., contaminated surface waters or radiments) had not been identified at the time of the study. The assessment of mazards to offpost biota are being addressed in the Offpost Endinversent Assessment (IA) that is currently being prepared.

The saint and content ill stails, were initiated to address the specific consern restricts the potential of human exposure offpost via wildlife that were posentially contaminated on EMA. The study design involved capturing inimits within EMA slong beautifies where the animals might be expected to move offpost, be tested, and subsequently consided by humans. Tracking stailed followed these inimits to determine if the size of the nome ranges threat the origin, of figures a find builting would permit individuals to make it is stated at the original forms and contains the original forms and the original forms of the original field or or

variety of reasons already discussed in the text sample sizes were small, yet the study did produce results that indicated movement of pheasants from onpost areas to the adjacent offpost areas. More quantification may have been useful, but the study did achieve its objectives and is sufficient for the conduct of an EA/FS on this potential pathway.

#### COMMENT

Vol. 1. Sec. 7.1. The title is misleading. Because no summer movements and wintertime movements of only one bird were monitored, the title should read Results of Fall Movements. Home range implies year-round monitoring which was not done.

#### RESPONSE

Most of the pheasants monitored during the study were monitored from August through November: therefore more than fall movements were monitored. Pheasants were deliberately monitored during August before they would be expected to disperse from the Rocky Mountain Arsenal (RMA) and change their seasonal use locations between summer and fall seasons. Depending on the animal group addressed, the term home range may imply year-round range, seasonal range, or lifetime range. Because most pheasants were monitored for more than one season, we believe that home range is a more appropriate term than fall movements for the title of this section.

#### COMMENT

Vol. I. Sec. 7:1:1: On p. 7-1, how was death from natural causes determined for pheasants found dismembered with the transmitter found nearby? Also, were any of the animal carcasses found intact with accompanying transmitters analyzed for contaminant concentrations? Transmitter effect on the natural movement of experimental birds is never mentioned. Was there a period of adjustment to the stress caused by handling/radio-fitting afforded each animal before data were collected from it? We are aware of some studies in which transmitter effects on the animals totally negated the validity of movement data. Who placed a reward band on the pheasant recovered 7.5 miles from the Arsenal? More details are needed on this. What does the term radio-collar mean? We are not familiar with collars used on birds. Usually a harness or tail clip type of radio attachment is used on birds. Sex should be indicated in Table 7.1-1. Why was 20 locations used as the cutoff for valid (?) movement data (top p. 7-3)? There was an admitted relationship between number of locations and activity range, i.e., more locations yielded a larger range. Perhaps pheasants with smaller ranges exhibited a radio effect. If a radio effect existed, at what point in time after radio-fitting did it cense to be a factor? Radio effect needs to brought in the discussion in this section. In para. 3, p. 7-3, references should be given and casual observations should be expounded upon. In para-4. p. 7-3, the first and last sentences are contradictory. Seasonal movement patterns could not be compared because only one pheasant was monitored during winter.

#### RESPONSE

Death from natural causes was assumed if the transmitter was found mangled (e.g., the insulation on the antennae was chewed) as if the pheasant had been killed by a predator and/or if the animal's recent movements indicated that the animal was active and apparently healthy prior to its discovery as a deceased individual.

Tissue analyses of pheasants found dead on RMA were beyond the scope of this investigation. A RMA-wide study of contamination and contaminant effects in pheasants was conducted as part of the overall RMA Biota Assessment Task and is included in the Biota RI document scheduled for review in early 1989.

Pheasants were captured during the late evening hours and were tracked starting on the following day. None of the pheasants tracked made any significant change in habitat during the period following their initial capture. Most stayed in the same general habitat as when captured. Released pheasants flew readily and with no apparent difficulty. Dunke and Pils (1973) reported that pheasants adjusted to transmitters within 1 to 2days. Hanson and Progulske (1973) found that pheasants in their study that had been equipped with radiotransmitters did not show signs of physical hindrance. The pheasants tracked in the RMA study were tracked for extended periods of time, thus any reduction in movements that may have occurred during the first two days of movement should not have significantly affected overall results. One study (Hessler et al., 1970) suggested that radiotransmitters lowered survival of pheasants, but the birds used in this investigation were raised in captivity and released into a foreign environment. These factors are known to reduce the survivorship of released animals.

Biologists from ESF placed the reward bands on all pheasants released with transmitters as a supplemental means of obtaining data, not as a separate study.

The term radio collar is equivalent to a bib transmitter. Both bib and harness transmitters were tested during a pilot study. The bib collar was selected because it was less easily lost by active birds than was the harness. The bib collar we used consisted of a single piece of material that was cut to fit (like a collar) over the head of each pheasant. The sex of the pheasants will be added to Table 7.1-1.

In the calculation of home ranges, increase in calculated home range size levels off after a sufficient number of captures has been reached. The cutoff point of 20 sightings was selected for the estimation of minimum home ranges based on past studies (Rose, 1982; Jennrich and Turner, 1969, and others) that have shown this to be a sufficiently large number to estimate the minimum home range of most species. The study design attempted to locate pheasants at different times of day and at different seasons to account for daily and seasonal shifts in movement between different use cureus.

The objective of the RMA pheasant study was to determine if minimum home ranges were large enough to permit individuals exposed to sites of contamination on RMA to move offpost, and not to simply estimate the home range of pheasants. The study accomplished this objective in spite of the loss of pheasants throughout the investigation. Pheasants with smaller home ranges may have exhibited a radio effect, but this does not alter finding that some RMA pheasants did move offpost.

#### COMMENT

Vol. In Sec. 7.2.5th paraling. 7.44. The statement about "the data obtained provide an objective and quantitative basis for evaluating potential pathways offpost" seems to hang out there in the face of admitted problems with the study. And, as mentioned above, contamination in resident biota offpost is not presented. Lack of evaluating or considering a potential radio effect surely weakens the results. Some studies have found aberrant behavior and restrictive movements exhibited by radio-fitted animals. The interpretation at least warrants this consideration. The pheasant that moved 7.5 miles offpost was apparently not radio-fitted but it was reward-banded. Perhaps this bird is more representative than were the radio-fitted birds. If so, a reward-banding study could have been more enlightening. Also, the population of lost transmitters may have included animals that moved offpost. In para, 2, p. 7-12, the draft Biota RI (ESE, 1988) should not be cited as a reference. It is not listed in the references and probably has not been released for our review yet.

In summary of Section 7.0, the discussion of findings in 7.2 appears to present a fair and objective assessment of the limitations and findings of the radio-tracking studies. A stronger opinion about the strengths of the study is what is transmitted prior to this point, however. Lastly, the Evaluation of Biota Contaminant Pathways given in Sec. 7.3 does not include mention of existing offpost contamination and its potential to contaminant offpost plants or animals.

### **BESPONSE**

Shortcomings and problems that weakened the data were presented earlier in the section, and in the first part of the sentence. We agree that the results were less quantitative than would have been possible with larger sample sizes and less disturbance, nevertheless the investigation results were objective and quantitative to the extent possible under the circumstances. Therefore, the additional effort and expense was not considered justified.

Contamination in resident blota are addressed in the Blota RI document which will be released early in 1989. The assessment of risk offpost from pheasants contaminated onpost is being addressed as part of the Offpost Endangerment Assessment that is also currently being prepared. Comments on the effect of radio transmitters were addressed in the previous response.

The pheasant that moved 7.5 miles offpost had been equipped with a radio transmitter, but the device had been lost. A reward banding study might have been more enlightening, but would have involved substantially more effort that the current study with no guarantee of a proportional increase in pertinent information. The study did demonstrate that RMA pheasants do move offpost, and that pheasants from RMA are obtained by hunters. The quantification of risks as a result of these movements is addressed as part of the Offpost Endangerment Assessment document that is currently being prepared.

No biological sampling was conducted in the offpost study area because of limited extent of offpost contamination from RMA that was detected. Contaminants of concern to biota were detected in sediments and surface waters at low levels. Biota sampling under these circumstances was not considered appropriate or necessary because hits above detection limits for contaminants in these media were at low levels, were sporadic, and for some contaminants (e.g., organochlorine pesticides) the source could not be attributed exclusively to RMA. The hazard to offpost biota as a result of this contaminant is addressed in the Offpost Endangerment Assessment that is currently being prepared.

#### COMMENT

Volume III. In Appendix H. p. vii, we would like to see listed in this section the tolerances and action levels on or in raw agriculture commodities that were identified in para. G. These data could be shown in the section on Potential Chemical-Specific ARARs for the EA for the Offpost Operable Unit. RMA.

#### RESPONSE

The tolerances and action levels on or in raw agricultural commodities will be provided in conjunction with the section on designated (no longer potential) chemical-specific ARARs in the Offpost Operable Unit EA/FS.

# HOLME ROBERTS & OWEN

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November 11, 1988

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Mr. Donald Campbell
Office of the Program Manager
for Rocky Mountain Arsenal
Attn: AMXRM-PM/Mr. Donald Campbell
Rocky Mountain Arsenal, Building 111
Commerce City, Colorado 80022-2180

Re: Shell Comments on Offpost Remedial Investigation Fotential ARARs

Dear Mr. Campbell:

Shell Oil Company submits the attached comments on Appendix H of the draft final report on the Offpost Remedial Investigation.

Very truly yours,

J. F. Gree fredward J. McGrath

EJM:TFC:cg Enclosures

cc: Office of the Program Manager for Rocky Mountain Arsenal

ATTN: AMXRM-PM: Col. Wallace N. Quintrell

Bldg. E-4460

Aberdeen Proving Ground, Maryland 21010-5401

Office of the Program Manager for Rocky Mountain Arsenal ATTN: AMXRM-PM: Mr. Bruce Huenefeld Rocky Mountain Arsenal, Building 111 Commerce City, CO 80022-2180

Office of the Program Manager for Rocky Mountain Arsenal ATTN: AMXRM-RP: Mr. Kevin T. Blose Rocky Mountain Arsenal, Building 111 Commerce City, CO 80022-2180

Mr. Donald L. Campbell
Page 2
November 11, 1988

Office of the Program Manager for Rocky Mountain Arsenal ATTN: AMXRM-TO: Mr. Brian L. Anderson Rocky Mountain Arsenal, Building 111 Commerce City, Colorado 80022-2180

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# Shell Oil Company



One Shell Plaza P.O. Box 4320 Houston, Texas 77210

November 11, 1988

Office of the Program Manager for Rocky Mountain Arsenal ATTN: AMXRM-PM: Mr. Donald L. Campbell Rocky Mountain Arsenal, Building 111 Commerce City, Colorado 80022-2180



Dear Mr. Campbell:

Enclosed herewith are a portion of Shell Oil's comments on the Draft Final Report entitled "Offpost Remedial Investigation and Endangerment Assessment and Applicable or Relevant and Appropriate Requirements". Comments on potential chemical-specific ARARs will be sent under separate cover.

Sincerely,

fr. E. Celeoch fr. J. C. K. Hahn Manager Denver Site Project

WEA:ajg

Enclosure

cc: (w/enclosure)
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11/11/11

cc: Office of the Program Manager for Rocky Mountain Arsenal ATTN: AMXRM-TO: Mr. Brian L. Anderson Rocky Mountain Arsenal, Building 111 Commerce City, Colorado 80022-2180

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Mr. Thomas P. Looby Assistant Director Colorado Department of Health 4210 East 11th Avenue Denver, 30 80000

# RESPONSES TO SHELL OIL (SHELL) COMMENTS ON REMEDIAL INVESTIGATION FOR OFFPOST OPERAGE UNIT

December 13, 1988

#### General Comments

Presently, there are only be monitoring wells in the four-square mile area (Sections II to 14 ) located directly north of the North Boundary Containment system. Basis the limited containment data that was obtained from these wells, it would be intilled to inter-continuous plumes with clean-cut contours of the entering the record. Inch the data base and its interpretation by the last object that any interest easibility studies.

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There are some and there is a some of the general comment which need to be addressed in first the few ways results that retinements to the offpost ground effort as a time class to which be recalled for remedial design. Currently, the Army is form, uting plans to some additional ground water data offpost. We exceed that it is a sensitive of the second, distinctly so that they can be evaluated for inclusion into further offpost data collection efforts.

Although the Army recognizes that additional ground water quality data will be required at the community, design stage, we believe that the existing conceptualization of the nature and extent of contamination in the offpost areas described in your comments is sufficient to conduct a Feasibility Study (FS).

We are in agreement that the isoconcentration lines are, in some instances, interpolated over significant distances, particularly in the area between Wells 373°1 and 37367 as identified in your comments. The Army is willing to supplement its monitoring network in this area to support remedial design and will incorporate your comments.

Although additional geologic and lithologic data will help to refine offpost paleochannels in Sections 12, 13, and 14, the two paleochannels which exert a strong influence on offpost alluvial contaminant migration (i.e., the First Creek and Northern Pathways) have been characterized sufficiently to identify them as primary pathways. We believe the hydrogeologic and geochemical data is sufficient to support a FS.

We are not in agreement that more data is needed before the need for remediation can be determined. The nature of offpost contamination has been reasonably determined. Although the extent co-alluvial contamination will have to be refined for design of remediation systems, we believe the characterization is sufficient to determine whether unacceptable risks are posed by offpost contamination. Thus, the next for remediation can be evaluated.

#### SPECIFIC\_COMMENTS

#### COMMENT

1. Page\_1=1, second paragraph.

If examples are to be listed arsenic and mercury should be included.

#### RESPONSE

The list of contaminants presented on page 1-1 was not intended to be allinclusive. Emphasis was placed on listing contaminants which have migrated to offpost areas. Arsenic has migrated to offpost areas at levels just above the detection limits and will be listed. However, mercury was detected only once in the Spring and Summer 1967 marterly sampling event conducted offpost. The addition of mercury to this introductory list is not appropriate.

#### COMMENT

2. Page\_1=3, last paragraph

Civen the Army's new policy on access to the RIC, shouldn't the Task 39 Technical Plan and supporting documents be in the JAPDF?

#### RESPONCE

All materials relevant to the Offpost Operable Unit will be included in the administrative record in the JARDF it the time of issuance for comment to the Offpost Operable Unit Endangerment Assessment EA/FS.

## COMMINI

3. Page 1=3. last line.

Trichloroethene is referred to, yet throughout page 1-4 references are made to trichloroethylene. The authors should be consistent with their nomenciature.

### RESPONSE

The text will be revised to consistently refer to this compound as trichloroethylene.

#### COMMENT

4. Page\_1=4, second paragraph.

Is the last sentence true? The area between 80th and 88th Avenues would be in the Off-Post Area. Under paragraph 8.1 of the RI/FS Process Document, the Army is Lead Agency. How can EPA have jurisdiction over TCE "as per previous agreements with the Army"?

#### RESPONSE

An Executive Order No. 12580, 52 CFR 2923 (1987) established that the EPA would be the lead agency in areas where multiple sources are suspected. Because documented sources of trichloroethylene and other volatile organohalogens exist to the south and upgradient of the area in question, it is the Army's position that the EPA will have jurisdiction over the cleanup in this area.

#### COMMENT

5. Page\_1=5, paragraph 1.2.1.

Shouldn't the description of the North Boundary System also mention the recharge trenches?

# RESPONSE

Construction of the recharge trenches was just beginning at the time this Draft Final Report was being prepared. The text will be revised to reflect the addition of the recharge trenches.

### COMMENT

6. Page 1=6, second paragraph.

CERCLA should be defined as the Comprehensive Environmental Response. Compensation and Liability Act, as amended by the Superfund Amendments and Reauthorization Act. We never refer to SARA separately in the Consent Decree or the RI/FS Process Document: it is a part of CERCLA.

### RESPONSE

There is no disagreement that CERCLA was simply amended by SARA. The fact that SARA was listed separately is only intended to indicate that the RI is not inconsistent with CERCLA and the SARA amendments. In the future, the Army will simply refer to CERCLA.

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#### COMMENT

7. Page\_1=8. last paragraph.

The Army should clarify that its preliminary evaluation of ARARs is a preliminary evaluation of potential ARARs.

#### RESPONSE

The text will be revised to clarify that only an identification of potential chemical specific ARARs have been identified in the RI report.

#### COMMENT

8. <u>Page 1=10</u>. Figure 1.0-2 should be corrected to include the surface waters of the O'Brian Canal and the Burlington Ditch from their confluence with Second Creek to Barr Lake. It might also help to avoid misunderstandings if the figure made clear that only the surface waters of Barr Lake are included.

#### RESPONSE

This figure will be revised to include the O'Brian Canal and Burlington Ditch from their confluence with Second Creek to Barr Lake. The figure will also be revised to make clear it is the only lake being examined in the RI.

#### COMMENT

9. Page\_3=12. Section\_3\_2\_1. second paragraph.

This paragraph implies that the alluvium and Upper Denver are functionally equivalent. While it is hard to disagree that these two formations are in contact. It may still be premature to say that hydrologically these two formations function as one unit.

#### RESPONSE

The text states that in areas of subcropping Denver Fm sandstones, the alluvium and Denver Fm are considered hydraulically connected and can act as one hydrogeologic unit. This statement implies that flow within the upper Denver Fm under these circumstances can occur under unconfined conditions because of the relatively high hydraulic connectivity (K) of the Denver sindstones and minimal contrast in F values between the Denver Fm and alluvium in these areas.

The explanation of this localized phenomenon will be expanded in the text to avoid any misinterpretations:

#### COMMENT

# 10. Page 3-50. Section 3.3.1.1.

This section should, but does not, provide a statistical treatment of the analytical data. See EPA "Guidance on Remedial Investigations Under CERCLA." at 3-4, and  $\delta$ -11 to  $\delta$ -12 (June 1985).

#### RESPONSE

There is no discussion of the need for statistical treatment of data in the more recent EPA Guidance Document of March 1968.

The cited references would seem to deal more with data validity. A discussion of the QA/QC data is provided in Section 3-3-3, however, we do not believe that there is enough QA/QC data to warrant a rigorous statistical treatment. Because the intent of your comment is not clear, we are willing to discuss it with you if we have not addressed your concern.

#### COMMENT

# 11. Pages\_3=50\_=\_3=54.

The data presented in Tables 3.3-1 and 3.3-2 provides a listing of the frequency of detection and range of concentrations for target analytes for samples collected from the alluvial aquifer. It is assumed that the detection limits, i.e., CRLs, are derived by USATHAMA protocols and that the detection limits are laboratory-specific and method-specific. If this is the case, the report should reflect this information in this section.

Also, the tables should identify the analytical methods, i.e., GC.MS. GC/electron capture detector, ICP, etc., for each compound listed. In many cases more than one analytical method is available, and it is not clear from Table 3.3-1 whether the number of concentration exceeding CRLs represents data from one method or several analytical methods.

#### RESPONSE

The information requested is provided in Table 2.1.-4. on pages 2-14 and 2-.5. The assumption that CRLs are derived by USATHAMA protocols and are laboratory- and method-specific is correct. The data provided in Table 3.3-1 represent only one analytical method for all the analytes but two. Mercury and arsenic were analyzed by different methods in the Denver and Gainesville laboratories as specified in Table 3.3-1.

#### COMMINI

# 12. Pages 3-561-13-51. paragraphs 2 and 3.

The report states that aldrin and isodrin were not observed at concentrations exceeding CRLs in samples from we'ls in the Offpost Operable Unit. The report continues, however, with the following statements:

"Aldrin and isodrin were observed at concentrations exceeding CRLs in analyses from previous sampling episodes. Although these analyses will not be discussed further here, they will be addressed in the endangerment assessment."

The endangerment assessment should be based upon information presented in the RI. Historical information from previous sampling campaigns, and possibly of questionable quality, should not be incorporated in the endangerment assessment.

# RESPONSE

The Offpost Endangerment Assessment (EA) has evaluated data from one additional sampling quarter. Winter 1967 (March. April 1987) or from all data collected in 1967 (i.e., the RI only presents data from the Spring and Summer 1987 Quarter) and was also detected sporadically offpost during 1985 and 1986 sampling events. Because aldrin was detected in the Winter 1987 sampling quarter and detected sporadically offpost during 1985 and 1986, it has been evaluated by the EA. Isodrin has not been detected in the Offpost Operable Unit since the Revision III-360° Program began monitoring in December of 1985 and will not be evaluated by the EA. The text will be revised to reflect these facts.

The Winter 1957 data were not included in the Ki because the most recently installed offpost alluvial wells (23 wells) were not available for sampling during the Winter 1957 quarter. Thus, the limited number of analyses obtained during the Winter 1957 quarter would have provided little if any additional information which had not already been presented in the Contamination Assessment Report (CAR) (ESE, 1957). For this reason, data from the Winter 1967 quarter were not presented in the RI report. However, data from the Winter 1987 quarter were used in the EA to provide a larger data base with which to evaluate the variability in contaminant concentrations from critical wells (i.e., 37344, Boller, etc.). Chemical data obtained from offpost wells during the Winter 1987 quarter will be provided in the Draft Final version of the RMA Water Remedial Investigation.

# COMMENT

# 13. Page 3-109. Section 3.3.4.4.

It amound be noted that, in particular, the confirmation of dieldrin or endrin in offpost ground water by GC.MS has not been possible in any of the analyses.

#### RESPONSE

Confirmation of dieldrin and endrin in offpost ground water by GC/MS would not be expected because the GC MS Method Detection Limits are approximately three to four times higher than the highest offpost concentrations detected by the GC method. The substantful differences between organochlorine pesticide detection limits for the GC and GC/MS methods are discussed in Section 3.3.4.4.

# COMMENT

# 14. Page\_9=1\_through\_9=3.

A discussion of the Irondale Groundwater Contaminant System should be included here with the other systems since the downgradient groundwater is within the Offpost Operable Unit.

#### RESPONSE

We will provide a brief discussion of the Irondale ground water containment system here even though the areas downgradient of the system fall under the jurisdiction of the EPA.

NOTE: Comments from Shell on potential ARARs are addressed separately.

STATE OF COLORADO

# COLORADO DEPARTMENT OF HEALTH

4210 East 11th Avenue Denver Colorado 80220 Phone (303) 320-8333







Thomas M. Vernon N: Executive Director

November 15, 1938

Mr. Donald Campbell
Office of the Program Manager for
Rocky Mountain Arsenal
Attn: AMXRM-PM, Building 111
Commerce City, CO 80022-2180

RE: The Offpost Operable Unit Remedial Investigation and Chemical Specific Applicable or Relavant and Appropriate Requirements Draft Final Report

Dear Mr. Campbell:

Enclosed are the State's comments on the Offpost Operable Unit Remedial Investigation and Chemical Specific Applicable or Relevant and Appropriate Requirements Draft Final Report. The report presents a more rigorous discussion of groundwater contamination than the Army has presented in the past. Nonetheless, there are numerous areas of concern that have not been addressed. Those areas are discussed in detail in the enclosed comments.

As the report is or will be available to the public, we suggest that it not be finalized due to the recognized need to collect further data and because further data collection may change conclusions that appear in the text. If the report is finalized, the Executive Summary should include a statement acknowledging that additional information is being collected and may alter the conclusions. Such a statement is important so that the public is not misled with respect to the nature and extent of contamination affecting offpost areas.

As you know, the report contains a vast amount of information. The State reviewed these data as extensively as possible in the comment period pro-ided. The State will continue its review and will provide additional comments as necessary.

The Final Task 39 Technical Plan indicates that a number of insues would be addressed in the Offpost Remedial Investigation Report. However, it does not appear that all of those issues have been addressed in the RI report. Therefore, the State has

Donald Campbell November 16, 1988 Page 2

included several comments which relate to statements made in the Task 39 Technical Plan.

If you have any questions regarding the comments, please contact Mr. Greg Brand with this Division.

Sincerely,

David C. Shelton

Director, Hazardous Material and Waste

Management Division

PB/rw

po: Michael R. Hope David L. Anderson

Chris Hahn

Edward J. McGrath Connally Mears Mike Gaydosh

Lt. Col. Scott Isaacson

Tony Truschel

enclosure

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# RESPONSE TO COMMENTS FROM COLORADO DEPARTMENT OF HEALTH

December 13, 1988

#### GENERAL\_COMMENTS

#### COMMENT\_1

1. Throughout the Offpost Operable Unit Remedial Investigation and Chemical Specific Applicable or Relevant and Appropriate Requirements Draft Final Report, the Army acknowledges that the data collected to date suggest that additional information is needed to fully define the nature and extent of off-post contamination. The State agrees that additional data should be collected. Therefore, the report should not be finalized until sufficient information has been collected, or in the event the report is finalized, a statement should be included in the Executive Summary indicating that data collection is ongoing and that the conclusions set forth in the report may change.

#### RESPONSE

It is the Army's position that the nature and extent of offpost ground water and surface water contamination have been sufficiently described for conducting an Endangerment Assessment/Feasibility Study (EA/FS). We do recognize the need to collect additional data to support remedial design. However, we believe it would be inappropriate to delay the cleanup of ground water in the offpost area to collect data which will not have an impact on the EA/FS.

The Army has also recognized the need to collect additional data pertaining to other media, such as sediments and soils, in the Offpost Operable Unit. Although the data available suggest that these media have been largely unaffected by contamination from RMA, we are currently collecting additional data relative to these media to supplement the data presented in the Remedial Investigation (RI). If these data suggest that these media will require eventual remediation, they will be addressed in an addendum to the RI and EA/FS reports.

NOTE: Assume 2nd Comment #1 is Comment #2.

#### COMMENT 24.

2. Substantial available sources of relevant data have not been utilized or incorporated in the offpost remedial investigation. The failure to include all available information in the interpretations presented in the offpost remedial investigation may result in an incomplete characterization of the offpost contamination and result in an underestimate of the areas potentially affected by contamination migrating from RMA. The draft report should be redrafted to include currently available data from the following sources:

a. Historical data from the domestic ("DOM") and other ("OTH") series wells. (By failing to include this information in the offpost remedial investigation, a substantially smaller zone of shallow groundwater contamination is depicted in the report than that documented historically. See general comment number 4.)

#### RESPONSE

Domestic wells have not been constructed to meet specifications for water quality monitoring wells. Thus, water chemistry data from these wells may be of questionable quality. The "DOM" and "OTH" series wells have not been monitored in 1987 and it is not appropriate to include historic data from these wells when constructing chemical distribution maps for 1987.

The chemical distributions obtained from the consumptive use programs were compared to those prepared in the RI and are in general agreement. Permanent monitoring wells were sited to encompass those areas indicating contamination as a result of the consumptive use monitoring. We agree that additional wells will be needed for remedial design downgradient of the irrigation canals where the plumes emanating from RMA are significantly diluted by virtue of recharge from the canals. We will incorporate specific recommendations you may have for selecting locations for additional monitoring wells downgradient of the canals.

#### COMMENT\_2b

b. Historical shallow aquifer contamination data north of 112th Avenue and west of Havana Street documented in the 1987 Offpost CAR and various Army consumptive use program reports. (Without prior knowledge of the Rocky Mountain Arsenal, the public (or any other reader) will not have any concept of the historical extent of contamination. Furthermore, the failure to include this information is misleading in that contamination migration calculations will be based on the present interpretation of the extent of a plume rather than on the historical extent of a plume.)

#### RESPOUSE

A clearer summary of the results of the Offpost CAR (ESE, 1987) and the Consumptive Use Reports will be included in the RI. Much of this background data was included in the Technical Plan and distribution plots from these programs will be included in the Final RI Report.

This comment suggests that contaminant concentrations and distributions in the Offpost Operable Unit have remained relatively unchanged since the Consumptive Use programs were conducted. However, contaminant concentrations have tailen steadily offpost as evidenced by chemical results for samples from monitoring wells downgradient of the RMA north boundary. The Army is willing to address specific data gaps where low levels of RMA contaminants, particularly DIMP, have been detected in the Offpost Operable Unit. But, the Army does not believe that the data collected several years

ago from domestic wells necessarily represents the present extent of contamination. Also, full size drawings showing the distribution of DIMP and other target analytes are available to CDH upon request as indicated in our response to Specific Comment #12.

# COMMENT\_2c

c. Data collected pursuant to the EPA RMA Offpost RI/FS.

#### RESPONSE

Data from the EPA RMA Offpost RI/FS are only included to the extent that they impact conclusions reached for areas under the jurisdiction of the Army. It is neither logical nor cost-effective to present data which is relevant only to areas under the jurisdiction of the EPA and has no bearing on the areas being addressed by the Army. However, a summary of potential sources in the EPA study area, resulting plumes that may be impacting the area north of 80th Avenue and a general discussion of the nature and extent of contamination in the Irondale area will be added to the Final RI Report-

#### COMMENT\_3a

- 3. Data from the following sources should be included in the offpost remedial investigation as soon as it becomes available:
  - a. Results from the Fri-County Health Department door-to-door survey in the offpost operable unit area. The survey will better define the location of wells, well depth, how the well water is used, and how long people have lived or worked on the property. The findings of this survey will likely increase the number of known wells which are or have the potential to be contaminated from the Rocky Mountain Arsenal. The Army should be prepared to initiate a comprehensive sampling program for new wells to assess public exposure to RMA contaminants. The results of this sampling program may effect the definition of the extent of contamination in the offpost remedial investigation study area.

## RESPONSE

The Army has conducted mail and door-to-door surveys in the Offpost Operable Unit from December 1954 to October 1986 and is confident we have identified most users of alluvial ground water. However, the Army has already stated their Willingness to initiate a comprehensive sampling program for new wells identified by Tri-County Health Department. Because the door-to-door survey is just beginning, it is doubtful that analytical data from a future Consumptive Use Program would be available within the next several months. We do not believe that results from additional private well samples will after the definition of the extent of offpost ground water contamination. Thus, the postponing of remedial actions offpost to wait for additional Consumptive Use data is not warranted.

#### COMMENT\_3b

b. Data from the recently discovered seeps occurring at residences immediately north of the North Boundary Containment System. The State and the Army sampled one of the seeps on November 11, 1968. State data from these samples will be provided to the Army as soon as they are available. If the seep contains contamination associated with the Rocky Mountain Arsenal, these occurrences will need to be investigated further.

# RESPONSE

The Army has initiated a program to sample several seeps noted along First Creek just north of the North Boundary Containment System (NBCS). The Army is prepared to conduct a thorough investigation of this potential pathway if preliminary data indicate these seeps are contaminated. Although this information will not be presented in the RI/EA/FS, these data will be evaluated to determine if unacceptable risks are present. If unacceptable risks are identified, remedial action(s) will be implemented as soon as possible to mitigate them. However, we do not believe that remediation of the source of these seeps (i.e., alluvial ground water) should be postponed to wait for the results of this sampling program. This data will be provided in an addendum to the RI and EA-FS reports.

# COMMENT

4. As the State's Task 39 and Offpost CAR comments indicate, it is inappropriate to arbitrarily limit the boundaries of the offpost remedial investigation study area. As stated in general comment number 1 above, the historical data base demonstrates that the contaminant distribution from RMA extends beyond the Army's study area. It makes little sense to design and implement an offpost remedy without evaluating all available data. Using a subset of the available data may result in the implementation of an incomplete remedy.

In addition, the north and northeast boundaries of the study area appear to be inhibiting a full definition of the extent of contamination. The limits of the offpost remedial investigation study area must be defined by the extent of contamination adjacent to and migrating from the RMA, not by pre-selected boundaries.

Similarly, it is impropriate to propose to limit the definition of the extent of contamination hoping that elevated health-based action levels will somehow eliminate the need to define the distal extent of the low level contamination. The NCP requires that the nature and extent of contamination be fully defined as part of the remedial investigation/feasibility study. Furthermore, future toxicological studies may indicate that chronic exposures to low concentrations of RMA contaminants may have adverse public health effects. Therefore, efforts must be made to define the full extent of offpost contamination within the limits of current technology during the offpost remedial investigation.

#### RESPONSE

The historical data presented in the Consumptive Use Phase I Report (CU Phase I) do not support CDH's comment (ESE, 1985). As presented in this report, the three wells which lie to the north and northeast of the Offpost Operable Unit northern and northeast boundary, did not exhibit detectable levels of any RMA contaminants (DIMP, DBCP, DCPD, chlorinated pesticides, volatile aromatic or volatile organohalogens). Furthermore, as stated previously, the Army contends that the extent of contamination as depicted by the CU Phase I Report and the Offpost CAR are consistent with that presented in the RI.

The second and third paragraph of this comment suggest that the boundaries of the Offpost Operable Unit were set without any consideration of preliminary chemistry and hydrogeologic data. This is not the case since monitoring has been conducted to the north and northeast of the Offpost Operable Unit boundaries. The boundaries have been established based upon preliminary monitoring data and ground water and surface water flow patterns. We believe that the boundaries have been appropriately set incorporating monitoring data and using sound scientific judgement.

# COMMENT\_5

5. There are an insufficient number of allowial aquifur monitoring wells, northwest of the Northwest Boundary Containment System to define the extent of shallow groundwater contamination. It is impossible to detect contaminants northwest of the Burlington Ditch with the present monitoring system. Sections 15 and in only contain monitoring wells at coarse density along their north and south section lines. Additional monitoring wells are needed in Sections 15 and 16 to correct this problem.

Contaminants such as chloroform and DIMP have been detected historically in the area northwest of the Northwest Boundary Containment System (offpost sections 9 and 10) with the aid of consumptive use wells. A chloroform plume has been preliminarily delineated in this area (Figure F-23), but too few wells exist to define the extent of the contamination. The 1977 Konikow groundwater modeling investigation showed this area to be a significant past contaminant pathway. The northwest plume is a significant pathway that must be fully defined. A plan to fully investigate the northwest plume should be drafted and provided to the MSA parties for review the comment.

# RESPONSE

We are in agreement that more confloring wells will be needed in Sections 15 and if for remedial design. The Army is willians to discuss CDH's specific recommendations for additional monitoring in this area. However, CDH above, I realize that well siting in this area will be more difficult because of lack of access to private land.

The Army believes that the nature and extent of contamination downgradient of the Northwest Boundary Containment System (NWBCS) is reasonably well understood. However, the extent of contaminants which persist in this area (i.e., primarily chloroform, and dieldrin) need further definition for remedial design. A plan for a supplemental technical investigation (STI) will be formulated as a part of alternatives developed in the FS. The results of this monitoring will be provided in the remedial design document for this area.

#### COMMENT\_5

6. There are an insufficient number of upper Denver Formation groundwater monitoring wells up and downgradient of the Northwest Boundary Containment System to determine the extent of upper Denver contamination in this area. The limited monitoring wells upgradient of the Northwest Boundary Containment System indicate the presence of Denver Formation contamination (e.g., aldrin and dieldrin). Therefore, additional monitoring wells up and downgradient of the containment system must be installed to determine the full extent of Denver Formation contamination.

# RESPONSE

Substantial monitoring of the Denver Fm downgradient of the North Boundary Containment System (NBCS) has been conducted. The primary contaminant pathway to the Denver Formation (Fm) downgradient of the NBCS was identified in the RI as vertical migration from the alluvial aquifer. Average linear velocities within the most permeable zones of the Denver Fm do not support the potential for extensive lateral migration through the Denver Fm. As such, the potential for Denver Em contamination downgradient of the NWECS is expected to be directly related to the level of contamination in the overlying alluvium. Because alluvial aquifer contaminant concentrations downgradient of the NWBCS are generally orders of magnitude less than those observed downgradient of the NBCS, a corresponding decrease in contaminant concentrations in the upper Denver Fm downgradient of the NWBCS is expected. However, the Army realizes the need to evaluate the potential for Denver  ${\sf Fm}$ contamination downgradient of the NWBCS with actual monitoring data. The Army is willing to discuss your specific recommendations for monitoring of the Denver Fm downgradient of the NWBCS and incorporate them into a plan for the STI discussed in our response to Comment #5.

#### COMMENTIZA

7. While progress has been made in mapping and correlating Denver Formation sand units apgradient and downgradient of the North Boundary Containment System ("NECS") (including an enhanced understanding of contaminant movement in the Denver Formation along the north boundary, the distribution of contaminants immediately downgradient from the boundary, and the estimation of vertical gradients) two issues must be resolved prior to evaluating remedial alternatives. Those issues are:

a. Contaminated Denver Formation monitoring wells that could not be correlated with sandstone units identified onpost or at the NBCS need to be assessed to determine how the wells became contaminated (i.e., what was and currently is the transport mechanism); and

#### RESPONSE

We believe that these wells became contaminated primarily as a result of vertical migration from the alluvial aquifer. In the few instances where contamination of the Denver Fm extends beneath the upper sand units at acluster site, the most probable pathway is migration down poorly constructed Denver Fm wells just upgradient of the detections. For example, a poorly constructed consumptive use well completed in the Denver Fm was abandoned near 96th Avenue and Peorla Street several years ago. The examination of travel times in the Denver Fm. presented on page 3-11d, does not support a theory of lateral migration over significant distances through the Denver Fm. We do not believe that the contamination is the result of lateral migration from near source areas through the Denver Fm. For the majority of organic contaminants, this explanation was reinforced by the absence of contamination in stratigraphically equivalent units upgradient and onpost-Thus, even though several offcost Denver Fm wells could not be correlated with onpost units, we believe that the transport pathways are understood reasonably well.

#### COMMENT\_76

b. The hydrology and contaminant distribution should be further evaluated to determine if contaminants observed in the Denver formation are due to lateral movement in sandstone units across the north boundary or by downward movement from the alluvial aquifer to the Denver formation (as evidenced by observed vertical gradients downgradient of the north boundary). The State suspects that both scenarios result in Denver formation contamination.

#### RESPONSE

As stated in our response to comment 7a, we believe that the contamination present offpost in the Denver Fm is primarily a result of vertical migration from the alluvial aquifer offpost (either by natural migration or migration down poorly constructed wells). However, we agree that for some compounds, most notably enforcement and benzene, migration pathways are not clear. An evaluation of transport pathways is comericated by large numbers of Denver Fm wells onpost near the north boundary and offpost (for example, bedrock wells have been abundaned annost near 16th Avenue and just north of RMA) that may have acted or are currently acting as preferred pathways to the Denver Fm. Thus, transport mechanisms to the Denver Fm are complex. Despite this, the travel times within the Denver Fm discussed on page 3-lis do not support the scenario of vertical migration appraisent of the NBCS and then lateral migration to offpost Denver Fm monitoring wells. Additional discussion of pathways to the Denver Fm is provided in the forthcoming Regional Ground Water Flow Modeling at RMA report.

8. While progress has been made in identifying nontarget compounds detected in groundwater, efforts must continue to identify additional semi-volatile unknowns, such as UNK 582. UNK 586. UNK 589. UNK 652, and UNK 657. The State agrees that caprolactum, dichlorobenzene and Bisphthalate should be added to the offpost target analyte list. The State also agrees that additional GC/MS analyses on the acid fraction for semi-volatile organics is necessary. The State further recommends that samples from new monitoring wells constructed under the Composite Well Program be GC/MS screened, particularly wells which will be constructed in the northwest plume area.

### RESPONSE

HLA to respond.

# COMMENT\_2a

- 9. The State concurs with the need to model the offpost groundwater system to simulate future contaminant concentrations in the alluvial aquifer. However, numerous issues and questions need to be resolved before the findings and conclusions drawn from the modeling effort can be accepted.
  - a. Harding Lawson Associates ("HLA") has assembled a large data base of aquifer properties and water level information. The offpost modeling effort should utilize the information from the HLA database.

### RESPONSE

The ground water flow/transport modeling effort in the RMA Offpost Operable Unit, included all the available information in this area. These data contain all information from previous studies in the area (Konikow, 1975, 1977; Robson, 1976, Warner, 1979; MEE, 1987; Ebasco, 1987; and SACWSD, 1987) as well as data from Tasks 25, 36, and 39 and the most recent information published by ESE (1988). This includes the data from the Water Remedial Investigation Report (WRIR).

# COMMENT 195

b. Kriging was used to estimate adulier properties and water table elevations (pz. 3-145) yet no details are provided in the report. Similarly, a storage coefficient of .05 to .25 was assigned in the model, but no distribution was provided. This information should be included in the report.

Details of the Kriging, including semi-variograms, are on file and available upon request, but we do not feel this information is appropriate or necessary for the RI report. The Kriging was used to make a first estimate of aquifer properties used in the model. These data were then adjusted during the model calibration procedure to achieve a best fit between the model calculated water table elevation and the observed water table elevation. The Kriging aided in the calibration of the model by minimizing the number of calibration simulations needed to achieve acceptable agreement with water table data.

In the vicinity of the NBCS to the O'Brian Canal a storage coefficient of .05 was used. Elsewhere in the model area a storage coefficient of .25 was used. A discussion of the distribution of storage coefficient values used in the model will be included in the report.

# COMMENT\_2c

c. A no-flow boundary was used for the contact between the alluvial aquifer and the Denver Formation. A sensitivity analysis should have been performed on the boundary condition to verify the validity of the no-flow boundary assumption. (Leakage from the Denver Formation could be very important to scenarios 3 and act)

### RESPONSE

Model simulations were conducted to study the impact of leakage from the Denver Formation on flow in the alluvial aquifer. Leakage from subcrops of the Denver Formation as well as upward leakage from the underlying Denver Formation were modeled. This leakage had negligible effect on flow in the alluvial aquifer. With regard to scenarios 3 and 4 (South Adams County Welifield pumping), the major recharge sources to the alluvial aquifer between the O'Brian Canal and Burlington Ditch and the South Platte River were canal leakage (2400 gpm) and infiltration of irrigation water (2335 gpm). Leakage from the Denver Formation is several orders of magnitude less than this. Thus, the fraction of total flow from the Denver Fm is very small and would have negligible affect on the results of simulations 3 and 4.

## COMMENT\_2d

d. Similarly, sensitivity analyses should be performed on the northeast and southwest boundaries. Based on the water table map (Figure G-6), these boundaries could be approximated by flow lines (i.e., no-flow boundary. How were the underflows of these boundaries determined?

In the calibration simulations the northeast and southwest boundaries were specified head. The calibrated model was then used to calculate the flow across these model boundaries. The model calculated flow quantities across the southwest model boundary were compared with MKE modeling efforts in the nearby area and found to be in reasonable agreement. Note that the aquifer thickness is fairly large along the Southwest boundary which results in significant underflow across this boundary. The aquifer thickness along the northeast boundary is less and the resulting underflow is smaller.

#### COMMENT 9e

e. It does not appear that a mass balance was computed for the model. Was it? The percent errors for various simulations should be presented in the report.

### RESPONSE

Mass balance error for flow and contaminant mass were calculated by the model. This is an internal check in the model. Mass balance errors were less than one percent for flow and less than 2.5 percent for contaminant mass in the model simulations. These overall mass balance results will be added to the text of the RI. Mass balance details are on file and are available upon request.

### COMMENT, 9f

f. A sensitivity analysis must be completed for the recharge estimates assigned to the Burlington Ditch and the O'Brian Canal. These canals appear to have an important impact on contaminant plumes. If the leakage is overestimated, the steady-state history match will overestimate hydraulic conductivity and result in a model that underestimates flushing times to clean up the aquifer.

## RESPONSE

Recharge quantities for canal leakage and percolation of irrigation water were obtained from the MKE recharge study (MKE, 1967). The MKE recharge data were analyzed on a cell by cell basis and used in the current model. No significant changes in the MFF recharge data were made. Minor changes made in the MKE recharge estimates include a reduction in recharge from irrigation in the vicinity of the fulton Canal, and redistribution of canal leakage to better match water levels during the calibration process it is important to note that total canal leakage was kept constant.

### COMMENT 191

The report should indicate how first Creek leakage was treated. Depending upon the location and the time of year. First Creek can be either gaining or losing.

On average, First Creek loses water to the alluvial aquifer as described in Section 4.0. The average annual leakage from First Creek was determined from flow data obtained at the gages at the North Boundary of RMA and at Highway 2. This recharge to the aquifer was assumed to be constant. Because the bottom of the impoundment along First Creek is always above the water table, while other reaches of First Creek may gain or lose water, the total recharge was assumed to be from the impoundment. A description of how recharge from First Creek was treated will be added to the text.

# COMMENT\_10

10. The surface water and sediment sampling performed in First Creek are insufficient. As the State's Offpost Contamination Assessment Report comments indicate, the sediment sampling program is insufficient to fully characterize the presence of contaminated sediment in the First Creek. O'Brian Canai drainage system. The offpost remedial investigation merely resampled the two First Creek sample points. Therefore, a more intensive sediment sampling program must be implemented focusing on First Creek, the First Creek impoundment, and the area downstream from the confluence of First Creek and the O'Brian Canal. The samples should be collected at a maximum of 1,000 foot intervals, with at least two samples collected at every location to evaluate local concentration variability.

#### RESPONSE

The premise of this comment is that the offpost CAR sampling locations were merely resampled. This is not correct. The reviewer is referred to Figure 2.3-1 which shows the latest sampling locations. In particular, it should be noted that two samples were collected and analyzed from the First Creek impoundment. No organic contaminants were detected in these samples. This is a significant finding because the impoundment would be expected to act as a sink for the accumulation of contaminated sediments from First Creek.

The sampling locations along O'Brian Canal and Barr Lake are also different from those in the Offpost CAR. The Army recognizes however, the need to collect additional sediment samples along First Creek and is willing to discuss your specific recommendations. The results of additional sediment campring and analyses will be provided in an addendum to the EI.

# COMMENT 11

11. The State has recently proposed a surficial soils sampling program to assess wineblown contamination in non-source areas onpost. The offpost area may also be a receptor of windblown contaminants and should be investigated in a similar fascion. The State proposes that a meeting be seneduled to discuss specific sampling locations.

Based upon a preliminary review of this pathway the Army does not believe that the windblown pathway is a significant exposure route in the Offpost Operable Unit. The Army is willing to discuss your specific recommendations for sampling locations but would also like to discuss the plausibility of this pathway by evaluating the potential for it to occur. For example, this evaluation could be most effectively accomplished by performing long-term air dispersion and deposition modeling. If the results of this assessment indicate substantial migration of contaminants via this pathway, then sampling could be performed using the model results as a guide. Again, we are willing to discuss your recommendations but would also like to explore other approaches for evaluating this potential pathway with CDH.

### COMMENT\_12

12. It is evident that remedial actions which will be conducted at RMA are likely to cause significant air emissions which will impact residents offsite. For example, the recent air and odor emissions associated with the closure of Basin F indicate that an offpost air quality monitoring program must be included in the Comprehensive Monitoring Program and operated continuously. Actually, observed data should be used in the offpost endangement assessment rather than predictive data. The actual monitoring data should also be used to verify the predictive results. Every available means to control air emissions must be employed and incorporated into all remedial actions.

### RESPONSE

The Army is committed to taking every precaution to control air emissions that result from remedial actions onpost. However, we feel it is important to recognize that current results from offpost air monitoring stations do not represent baseline offpost conditions and only constitute a temporary condition. Thus, the use of this data to evaluate long-term exposures is not appropriate. Interim responses to control emissions will be conducted during all remedial actions to minimize airborne emissions.

# COMMENT\_13a

- 13. The Final Task 39 Technical Plan indicates that certain data would be collected for use in the Offpost Endangerment Assessment. Those data are not presented in the drift report and it does not appear that the information was collected as part of the offpost investigation. A separate section on offpost land-use and demography should be included in the final offpost remedial investigation. Information which should be defined, to the extent possible, and factored into the report includes:
  - Current land-use, water use, blots population, and characterization of human populations (i.e., identification of potentially sensitive subpopulations such as children, pregnant women, intunts, and the chronically ill).

Much of this data was gathered as part of the offpost assessment and is more appropriately included in the Offpost Endangerment Assessment (EA). The specifics of this comment will be addressed in responses to comments on the EA report.

### COMMENT\_13b

b. Future land-use and water use based on future development of areas east, northeast, north, and northwest of the Rocky Mountain Arsenal. For example, the proposed 96th Street Highway, the proposal to construct E-470, and the proposal to construct a new airport east of RMA will impact on the growth patterns around the RMA. Similarly, the South Adams County Water and Sanitation District ("SACWSD") plans for water needs and water use north, northeast, and northwest of the RMA must be incorporated into the report.

This information is essential in estimating the human populations which will likely be exposed to RMA contamination.

### BESPONSE

we agree these factors need to be considered and they have been examined in the  $\mathsf{E}\mathsf{A}$ .

### COMMENT\_14

The Final Task 39 Technical Plan indicates that the Offpost Endangerment Assessment would be available at the same time as the offpost RI report. During the October, 1936, MOA meeting, the Army indicated that the Endangerment Assessment would not be available until the Feasibility Study report is released. The Endangerment Assessment must be made available prior to the Feasibility Study if any party is to have a meaningful opportunity to review and comment on the report.

## RESPONSE

The referenced meeting was not an MOA meeting but rather a meeting of the RMA committee pursuant to the RI/FS process document.

Consistent with the Technical Program Plan and the Army's comments at the October 1955 meeting, the EA will be released for comment in conjunction with the FS.

# COMMENT, 15

15. The Final Task 37 Technical Plan states at page 9-3, section 9-1 that, "Industrial or commercial facilities that routinely use solvents will be identified in specific portions of the study area where anomalous contaminant levels have been observed." It is unclear where this data

was or is to be reported. However, the data are not included in the offpost remedial investigation report.

## RESPONSE

Several facilities have been identified in the EPA study area that may have impacted the water quality in the southern portion of the Offpost Operable Unit where solvents have been sporadically detected. A summary of these data will be provided as indicated in our response to comment #2c.

#### SPECIFIC\_COMMENTS

### COMMENT

 Pg. 1-3. The text should include a summary of findings from EPA's RMA Offpost RI/FS for the area south of 80th Avenue and west of RMA.

## RESPONSE

See response to comment #2c.

### COMMENT

Pg. 1-4. The offpost operable unit is not conservative and fails to include the western boundary, an area known to be impacted by contamination migrating off the Arsenai. All identified groundwater contaminant flowpaths from RMA should be included in this report. Therefore, this report should include an evaluation of the contamination migrating off the western boundary of RMA.

# BESPONSE

Multiple sources have been documented in the area to the west of RMA and are currently under investigation in connection with the EPA's Second Offpost Operable Unit. As per an Executive Order No. 12580, 52 CFR 2923 (1987), the area is under the jurisdiction of the EPA.

## COMMENT

2: 2p. 1-5 and 1-0. The text should include a summary of the problems associated with the boundary systems and a summary of findings from Tacks 25 and 36.

# RESPONSE

An introductory statement will be included to discuss the boundary system(s), a reference to Tasks 25 and 36, and a brief summary of the relevant findings. The specific findings of these tasks are provided in the Task 25 and Task 36 reports.

4. Pg. 2-6. Tables 2.1-1 lists monitoring wells 37310, 37319, 37323 and 37365 as alluvial aquifer wells. Figure 2.1-4 states that the same wells are Denver Formation wells. Please modify the report to properly characterize the aquifer monitored by the wells.

## RESPONSE

The text will be modified to correct this inconsistency.

### COMMENT

5. Pg. 2-16. The analytical data used in this investigation will not be used solely for the RITS engineering efforts, as stated. These data also will be used in support of the endangerment assessment. Given the toxicity of certain RMA contaminants, the lowest detection levels should be attained. Therefore, it is inappropriate to use CRLs. The risk of reporting false negatives is the same for the CRL and MDL methodologies (approximately 50%). The analytical methodologies are also of similar difficulty and cost. Therefore, MDL methodology must be used to achieve the lowest detection levels and to assure that the detection levels are lower than the action levels.

# BESPONSE

The Army believes that the concentrations below the CRL lie within a range where the uncertainties are too large to justify quantification. Although these highly uncertain results are not sent to the RMA data management system, they are available as raw data to supplement reported results where there may be ambiguities or contradictory results. We believe that the CRL estimates from the USATHAMA procedure are better representations of what will be achieved in long-term programs conducted by contractor laboratories. A more comprehensive discussion of the rationale for using the CRL methodology is provided in the "Development and Evaluation of Analytical Methodologies Used in RMA Soil Investigations" (Ebasco, April 1988).

## COMMENT

6. Pg. 2-27. Table 2.4.1 indicates that hydrochloric acid was monitored in a previous air quality monitoring program. The results should be included in the report.

# RESPONSE

The intent of Table 2.4-1 was to provide a general understanding of previous air quality monitoring programs that had occurred during a variety of activities at the RMA. As in the case of hydrochionic acid monitoring, air quality samples were collected in 1269 during demilitarization activities. Reporting hydrochionic acid data here does not beem appropriate as activities suspected of generating hydrochloric acid have ceased.

7. Pp. 3-6, 3-17, and 3-46. The Army needs to confirm the existence of the 50 to 100 foot clayshale "buffer zone" which apparently provides hydraulic separation between the Arapahoe and Denver formation aquifer systems. This determination can be made by constructing groundwater monitoring wells into the Arapahoe formation. These wells should be used to monitor the potentiometric surface and water quality of the Arapahoe aquifer.

#### RESPONSE

The Army does not agree that monitoring wells should be constructed into the Arapahoe Formation to "confirm" the buffer zone. The presence of the buffer zone is well documented and merely confirming its presence does not justify the risk of cross-contamination caused by extensive drilling into the Arapahoe Formation. The Army will continue to monitor existing Arapahoe wells in the Offpost Operable Unit to assess the water quality of this aquifer.

# COMMENT

8. Pg. 3-33. Konikow's 180 gpm/mile groundwater recharge estimate from the Burlington Ditch and O'Brian Canal leakage appears to be low. A 1988 field investigation conducted by MKE (the results of which the State has not received) and groundwater modeling work by Harding Lawson Associates, provide more comprehensive and more recent estimates of groundwater flow than the Konikow estimate. The most recent estimates should be used in the offpost remedial investigation.

# RESPONSE

We are in agreement with this comment. The Konikow estimate was only used as an approximation early in this section of the report to demonstrate that recharge from the canal is substantial. Morrison-Knudsen's recharge estimates were used for numerical modeling (MKE, 1987). A consistency check has been performed by HLA to address any differences between the RMA regional model in the Offpost Operable Unit and the offpost RI model. This check revealed that the recharge estimates for the irrigation canals used in both models were similar.

### COMMENT

Pg. 3-39. Deriver formation equifer cumping tests, similar to those conducted at the north boundary, should be conducted along the northwest boundary due to the variability of the hydraulic properties of the Deriver formation.

A substantial data base for the hydraulic properties of the Denver Fm exists at RMA. Although we agree that the hydraulic properties vary substantially across RMA, we believe that the existing data base should be examined before additional pumping tests are conducted. Much of these data are presented in Task 25. If hydraulic test data are available for Denver Fm units onpost that are similar to units encountered along the RMA northwest boundary, then reasonable estimates of hydraulic properties may be attainable from existing data. Also, the water quality of Denver Fm units downgradient of the northwest boundary should be established before extensive hydrologic testing can be justified.

### COMMENT

10. Pg. 3-47. The Arapahoe formation is an important source of municipal water supplies for the metro area, yet no Arapahoe observation monitoring wells exist at KMA. A potentiometric surface map for the Arapahoe formation should be part of this remedial investigation.

### RESPONSE

As pointed out in our response to your comments on the Task 30 Technical Plan, we believe the most prudent method of investigating the bedrock aquifers at RMA is to monitor the uppermost aquifers (those most likely to be affected) and proceed downward to adjacent units which do not indicate contamination. We do not believe that arbitrarily installing wells at depths corresponding to the Arapahoe is an effective approach to defining the vertical extent of contamination nor is it warranted given the risk of cross-contamination associated with drilling into the Arapahoe Fm.

# COMMENT

11. Pg. 3-46. The report infers that the contamination detected in the Arapahoe formation is due to poorly constructed domestic wells. While this inference may be true, there are insufficient data to conclude that these wells are the only contaminated Arapahoe formation wells or that poor well construction is the only cause of Arapahoe formation contamination. The Arapahoe formation needs to be further investigated to identify all pathways of contamination and to fully define the extent of contamination in this aguiter.

# RESPONSE

The Army will continue to monitor private Arapahoe Formation wells in the Offpost Operable Unit. We do believe that the poorly constructed wells mentioned are responsible for the continuation detected in the Arapahoe

Formation. We do not believe that the low levels of DIMP detected warrant the risk of cross-contamination caused by extensive drilling into the Arapahoe Formation. A program to abandon poorly constructed Arapahoe wells in the Offpost Operable Unit will be evaluated as a part of alternatives examined in the FS.

### COMMENT

12. Pg. 3-55 and Appendix F. Please explain why the chemical distribution maps for the alluvial aquiter extend only two miles north of the northern RMA boundary. Known contamination for chloride, chlorobenzene, chloroform, DIMP, fluoride, and sulfate extends beyond this limitation. For example, the consumptive use investigation conducted by ESE in December 1984 and January 1985 showed RMA specific contamination extending into sections 1, 2, 35, 27, and 26. While all of these sections are in the study area, they, is not included in the chemical distribution maps. All chemical distribution maps must define the full lateral extent of contamination.

#### RESPONSE

Full size chemical distribution maps that incorporate the entire Offpost Operable Unit, have been prepared but were too bulky to incorporate in the RI report. With the exception of DIMP, the maps in the report do show the extent of offpost ground water contamination. To facilitate your review of offpost data, chemical distribution maps which incorporate the entire Offpost Operable Unit are available to CDH upon request.

# COMMENT

13. Pg. 3-55 and Appendix F. The chemical distribution maps for chloride and sulfate do not adequately represent the contamination which has migrated off RMA. Page 3-69 provides a background concentration range for chloride of 34-102 mg 1, however the isoconcentration lines on Figures F-38 and F-39 begin at 250 mg/l. Similarly, Page 3-69 provides a background concentration range for sulfate of 43-220 mg/l, however the isoconcentration lines on Figures F-44 and F-45 begin at 250 mg/l. All four of these figures must be replotted using a minimum contour of at least 50 mg/l.

## RESPONSE

We are in agreement with the intent of this comment. However, a minimum contour interval of 50 milligrams liter (mg/l) is not appropriate for sulfate because downgradient concentrations are never less than 50 mg l. The chemical distribution map for sulfate will be redrafted with a minimum contour interval of 150 mg l. We believe a minimum contour interval of 50 mg l will be appropriate for chloride and distribution maps for this analyte will be redrafted accordingly.

14. Pg. 3-59. DIMP has been detected in the area downgradient of the Northwest Boundary Containment System (offpost sections 9 and 10). The historical presence of DIMP has not been discussed in the report. As noted in the general comments, the monitoring well network in the area northwest of the RMA must be improved to better define the northwest plume, including the distribution of DIMP.

### RESPONSE

Please see our response to general comment #5.

#### COMMENT

15. Pg. 3-113. Although the section is entitled "Distribution of Nontarget Analytes", very little information is presented on the location and distribution of nontarget analytes (e.g., paprolactum) and the frequently occurring TICs. For the State to verify the reported objectives and conclusions in this section, the original data base had to be searched because of the vague discussion in the text. A more complete evaluation and analysis should be included in the report. Summary maps and tables should also be presented.

### BESPONSE

A summary of frequency of detection for TICS will be added to the text. The TICS were not detected frequently enough offpost to justify distribution mapping. However, the wells from which samples exhibited TICS and the concentration ranges will be included in the frequency of detection table to facilitate evaluation of the data.

### COMMENT

16. Pg. 3-126. Please clarify whether the last sentence of the first full paragraph with respect to the extent of DCPD contamination downgradient of the MBCS indicates that additional wells are needed in the downgradient area along Joth Avenue.

#### RESPONSE

This interpretation is correct. Task 3h identified the need for more alluvial water quality monitoring wells in this area to fully assess the effects of the NECS on the DCPD plume.

# COMMENT

17. Pp. 4-3 and 4-7. The text needs to explain in further detail the DIMP detected in First Creek at station 05ADD and in the South Platte River at station 01CDD given that these stations are located upstream of known RMA contamination sources and that RMA is the sole source of DIMP.

The pathways for these detections of DIMP are not known. Because both detections are just above the CRL, have not been repeated in subsequent samplings, and were only detected in the first surface water sampling event (12/85), we believe the detections are the result of errors in the field and/or in the laboratory. The Army will continue to monitor these stations to verify that they are anomalous results.

#### COMMENT

18. Pp. 4-20 and 4-21. It is concluded that groundwater discharges to First Creek during periods of low flow is the primary contaminant pathway to offpost surface water. The State concurs with this finding. However, a more extensive surface water/groundwater monitoring and sampling program is needed to determine the spatial and temporal interaction of groundwater and surface water along First Creek. For example, additional surface water sampling stations should be located between stations 13DCC and 14BDD. The additional stations should be sampled during periods of low flow. Continuous groundwater level recorders should also be installed in wells along First Creek to better define the interaction between groundwater and surface water.

# RESPONSE

We are in agreement that additional data are needed along First Creek to more fully characterize ground water/surface water interactions in this area. The Army has recently collected additional surface water samples along First Creek and between the upstream and downstream gages. We are going to conduct additional monitoring under the Comprehensive Monitoring Program (CMP) and are willing to discuss your specific recommendations for this work.

# COMMINI

19. Pg. 5-1. (See general comment number 10.)

# RESPONSE

See our response to General Comment #10.

## COMMIST

20. Pg. 6-1 to 5-10. Offsite monitoring for airborne pollutants must be performed. As the lead agency, the Army has the responsibility to define the extent of contamination in all media, including air. The report should explain why actual offsite monitoring for airborne pollutants has not been performed to date.

Offsite air monitoring was not conducted during the RI because onsite air monitoring near sources showed low-levels of contaminants. There were no remedial actions at Basin F at the time that the RI was underway and onsite air quality levels at the basin were considered worst-case. Now that remedial actions are underway, emissions are somewhat elevated but we stress that it is important to recognize that these levels are temporary and do not represent a long-term exposure.

#### COMMENT

21. Pp. n-1 to n-10. The specific results of the predictive offpost toxic airborne analysis (i.e., predictive concentrations at the boundaries and the data used for input parameters, such as stability, diffusion and wind speed) must be presented in the report. The conservative assumptions that were made regarding the input parameters should also be commented in the report. The findings of the predictive offpost airborne analysis cannot be accepted in the absence of these data.

### RESPONSE

The predictive toxic airborne analysis utilized gaussian dispersion method equations under conservative conditions. Specificarly, we assumed that emissions evolved from Basin F migrated to the nearest boundary to the northwest. Under slightly stable conditions, winds at 3 miles per hour were moving from southeast to northwest across Basin F. We assumed no volatilization of airborne contaminants during dispersion. A discussion of the input parameters and assumptions used in dispersion calculations will be added to the RI report.

### COMMENI

22. Pg. 6-3. The report states that semi-volatile compounds identified near the boundary of Basin F comprise "low concentrations". The State disagrees. Dieldrin and CMPS02 have been detected at maximum concentrations of 1.6 ug/m³ and 1.7 ug/m³, respectively. These concentrations are relatively high and may present a significant health risk. Even if the conclusion that offpost concentrations are an order of magnitude lower (a conclusion that cannot be substantiated given the lack of documentation), these tonics are impacting offpost air quality.

# REJECTISE

The source of these airborne contaminants is currently being remediated by the interim action being conducted at Basin F. We believe that this is the most effective means of mitigating exposure to these airborne contaminants.

- 23. Pg. 6-3. The results from the Task 18 onpost air investigations have been used to predict the offpost air concentrations. Previously identified problems with the Task 18 investigation affect the onpost results, and therefore the off-post predictions. The two major problems are:
  - a. The limited suite of compounds included in the analytic program. Many compounds could have migrated offpost but were not detected because of the limited analyte suite.
  - b. Hi-vol monitors were not located in the direction of predominant high wind events. The worst case scenario of wind transport has not been evaluated in the offpost remedial investigation.

### RESPONSE

The Task 18 monitoring program addressed these concerns in the "Air Remedial Investigation Final Report." Relative to the various potential airborne contaminants, there were several volatile and semivolatile organics for which certified methods were used to monitor airborne contaminant concentrations. Additionally, if unknown compounds were detected during sampling, attempts were mae to identify these compounds. We do not feel that many compounds course have migrated offpost and not been detected during Task 18 monitoring. During the upcoming CMP, additional air quality monitoring will be conducted at the basins and at the boundaries. If contaminants are identified that had not been observed previously, their impacts to offpost air quality will be evaluated.

Because the intent was to determine the average ambient TSP levels, we did not focus the TSP sampling specifically on downwind conditions. However, TSP samples were collected at all of the RMA boundaries including in the predominant high wind event direction.

# COMMENT

24. Pg. 6-10. Without an offpost air monitoring program, it is impossible to conclude that RMA is not a source of airborne contamination for particulates and ozone.

#### SECRETA

Particulate levels at RMA were less if the interior of the Arsenal and greater at the boundaries. Sampling results indicate that offpost of RMA contains more significant sources of particulates than sources onpost. As an example, TSP concentrations at the western boundary are higher than concentrations if the interior of the site, especially during the winter when Quebec Street is sanded.

Offpost sampling for ozone will not provide a direct correlation of ozone levels to the Arsenal. Because ozone is related to widespread point and non-point sources, including hydrocarbons and nitrogen oxides from automobile exhaust, gasoline, and oil storage and transfer facilities and industrial paints, solvents, degreasing agents, cleaning fluids, ink, and incompletely burned wood or coal, it would be difficult to draw direct correlation between the RMA and offpost ozone sources.

### COMMENT

25. Appendix H. Pg. v. The text is unclear with respect to the relationship between chemical-specific ARARs and the Endangerment Assessment process. The Endangerment Assessment process cannot be used to unilaterally establish action levels where chemical specific ARARs exist. Please clarify.

### RESPONSE

The EA will not unilaterally establish action levels irrespective of ARARs. The process set torth in Figure 2-3 of the Technical Program Plan (and the related text) will be followed in order to integrate ARARs into the EA process.

## COMMENT

26. Appendix H. Pg. vi. The text should include 5 CCR 1001-2 through 5 CCR 1001-10 as potential air ARARs.

### RESPONSE

The State's suggested potential ARARs will be addressed separately.

# COMMENT

- 27. Appendix H. Pg. vi. The text should include the following potential groundwater ARARs:
  - Colorado Basic Standards for Groundwarer, 5 CCR 1002-8, Section 3:11:0 et seq. (in particular Tables 1, 2, and 3).
  - Colorado Basic Standards and Methodolegies: 5 CCR 1002-8. Section 3:1:0 et wegs (in particular Section 3:1:1).

# REJECTION

The State's suggested potential ARARs will be addressed separately.

28. Appendix H. Pg. viii. Contrary to the statement in the text. the State has identified promulgated chemical-specific ARARs for RMA on several occasions. In particular, the State identified ARARs on January 6, 1987, March 7, 1987, and most recently on July 18, 1988. The Army has consistently ignored all promulgated State statutes and regulations. This practice is inconsistent with U.S. EPA actions at Colorado CERCLA sites and is not consistent with Section 121(d) of CERCLA. To the extent the State promulgated standards are more stringent than the federal standards, the State standards must be met. Attachment I contains State identified chemical-specific standards (ARARs).

# RESPONSE

The State's position concerning potential state ARAR's will be addressed separately.